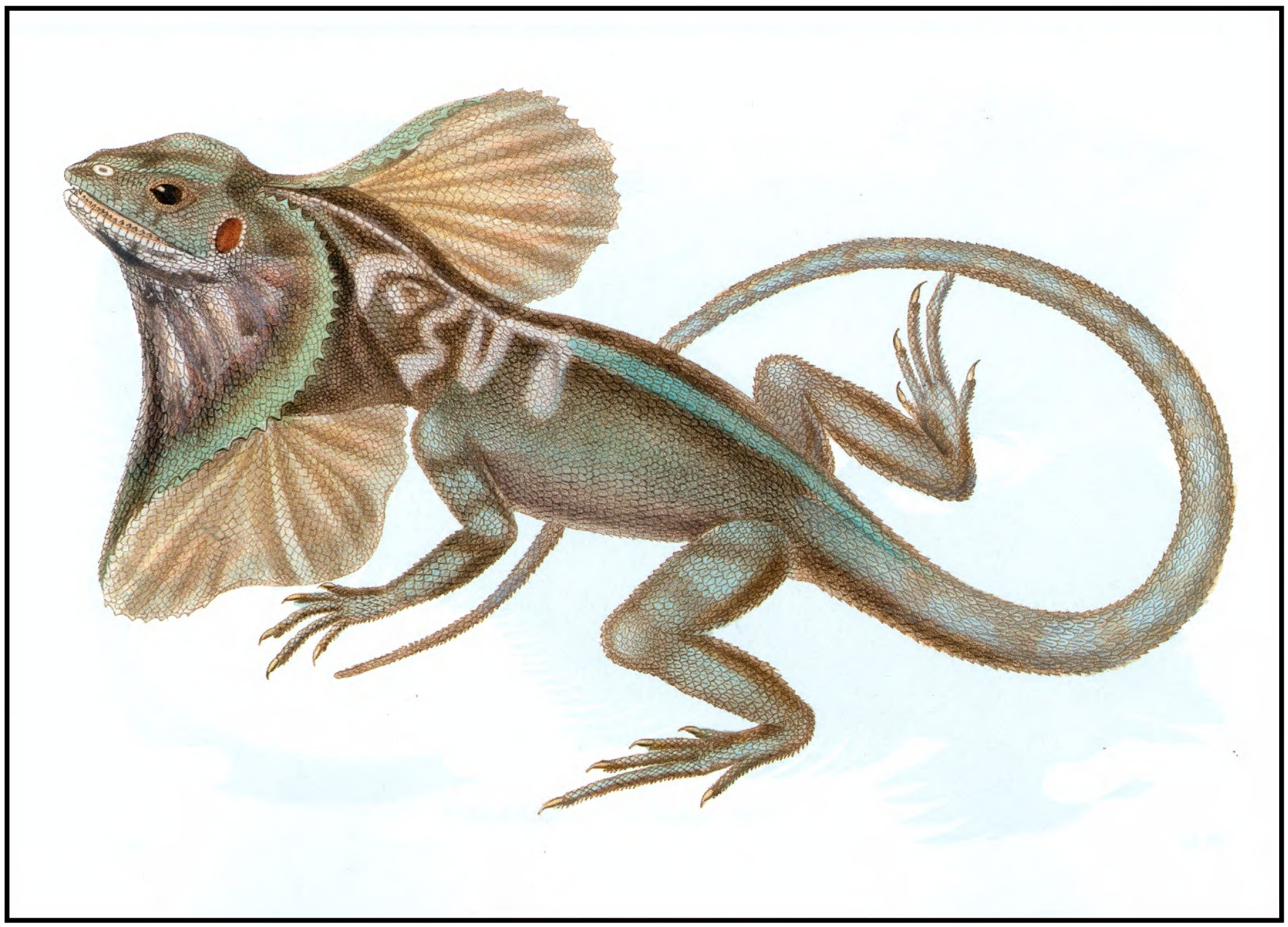
# BULLETIN
## of the
# Chicago Herpetological Society

**Volume 57, Number 5**
**May 2022**



# BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY
## Volume 57, Number 5
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# Keeping Track of the Neighbors (Part One)

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Back in 2019, I introduced CHS members to some of my herptilian neighbors around the condo my wife and I have in Naples, Florida. For someone like myself, raised in the urban Upper Midwest (Minneapolis, Milwaukee, suburban Chicago), the novelty of having amphibians and reptiles outside my door—and occasionally inside the door—year-round was a very pleasant surprise. Okay: One reason I liked the first floor condo was the Southern Black Racer my wife spotted basking on the hedge outside the living room window when we were shown the condo.

Since we go back and forth between Naples and Chicago throughout the year, I've seen these neighbors at all seasons and at all times of day. With every visit, I appreciate more and more the opportunities I have to watch the animals in a relatively natural environment. They're teaching me things about their lives that probably won't surprise anyone who has regular exposure to them, but certainly delight me.

For example, the Cuban Brown Anoles: These are by far the most commonly seen reptile, both around the condo and in more natural areas like parks and preserves. Based on the very small ones I see all year, I guess their breeding "season" is year round. If the night has been "chilly" (it has dropped into the high 40s a few times), the anoles may not reappear until after noon. On warm nights, I've noticed them hanging around lights, hunting for insects (unfortunately, most places in Naples have zealous exterminators on retainer, so every other week or so someone shows up to spray insecticide; one new owner of a stand-alone house asked to be excluded and was told by the homeowners association that he could move).

A palm tree stands about four feet outside our lanai door. Resurrection fern has colonized its trunk a few feet off the ground, and the anoles often gambol through the fronds. On sunny days, especially in the afternoon, a large male, head straight down, displays his bright blood orange dewlap about 12 feet up in the tree, while smaller anoles leap through the shrubbery and dash across open spaces.

The community where we have our condo is built around a 44-acre spring-fed lake that once was a limestone quarry. A jumble of large rocks (rip-rap) lines the shore. The Brown Anoles have exploited this niche too, but they expose themselves to danger. Late one morning I watched an immature Little Blue Heron methodically stalking the rocks. While the adults of this species are blue, the immatures are white and can be confused with two other species: the Snowy Egret and the Cattle Egret. The dark bill of the Little Blue, though, is a good field mark. This species stalks slowly, usually with its neck outstretched and its eyes fixed on the ground ahead. The one I watched did just that. Suddenly it darted its head toward the rocks and emerged with a male Brown Anole in its beak. The lizard flashed its dewlap: If that was meant to startle the bird, it didn't work. Was it meant instead as a warning to the other anoles? The lizard struggled in the bird's beak, but after a couple of minutes the heron managed to orient the lizard and swallowed it head-first.

Little Blue herons aren't the only avian predators on Brown Anoles. A day or two after I saw the heron eat the lizard, I spotted what I would assume to be the same bird and a Cattle Egret, another small white heron that is distinguished by its yellow bill, searching through the bushes in front of the building next to ours. Cattle Egrets are unusual around our lake, but I see them frequently in open fields throughout the area, as well as in parking lots. Late one afternoon, while waiting to make a left-hand turn, I saw a pair of Cattle Egrets carefully searching for anoles in the low bushes of a median strip, ignoring the traffic. Another heron species I've seen stalking and consuming anoles is the Great Egret, the large, white heron that we see in the summer in the Chicago region.

I'm speculating here, but I think the Brown Anole has become an important prey species for a whole range of predators, not just birds. I've watched Black Racers stalk these lizards, their tongue slowly flickering as they inch forward. As often as not, the lizard appears aware of the snake's approach and freezes; as often as not, the lizard escapes when the snake lunges for it.

Another lizard I spot frequently around and sometimes in our condo is the House Gecko. As the nights become warmer and more humid, these lizards, who closely approximate the pale coral pink paint on so many buildings in the area, start making their appearance around lights at night. Their color would be an effective camouflage, except their black eyes give away their location. More skittish than the Brown Anoles, the geckos often flee the moment they detect a person's presence. Therefore, I was surprised that for the past few months a small gecko has been on the walls in the vestibule outside our front door. It seems to spend its days hidden away inside the storage room in the outside vestibule. My wife isn't afraid of these lizards, but she doesn't want them in the condo: The few we've found inside the condo startle her, and she doesn't appreciate that kind of surprise.

An immature Little Blue Heron about to eat a Brown Anole.

This Brown Basilisk was seen for several years in front of the author's condo; he discovered it dead one day in the parking lot.

An immature Brown Basilisk basking at North Collier Regional Park.

As I spend more time in Naples, I am seeing a lot more Brown Basilisks. I became familiar with one large male with a stump of a tail that often basked beneath cars in the parking lot. He was a wary sort, but if I kept my distance, he allowed me to photograph him. When I found his body in the middle of the parking lot, I was sad and puzzled. He didn't appear to have been hit by a car. Did he die of old age? After his death, I began seeing more basilisks of various sizes around the condos.

I've discovered two "basilisk hot-spots" the last few months: North Collier Regional Park and, about 14 miles south, Sugden Regional Park. North Collier has three ponds. Model boat hobbyists sail their remote-controlled boats on the north side of the largest pond, but there are beds of reeds on the east, south, and west sides.

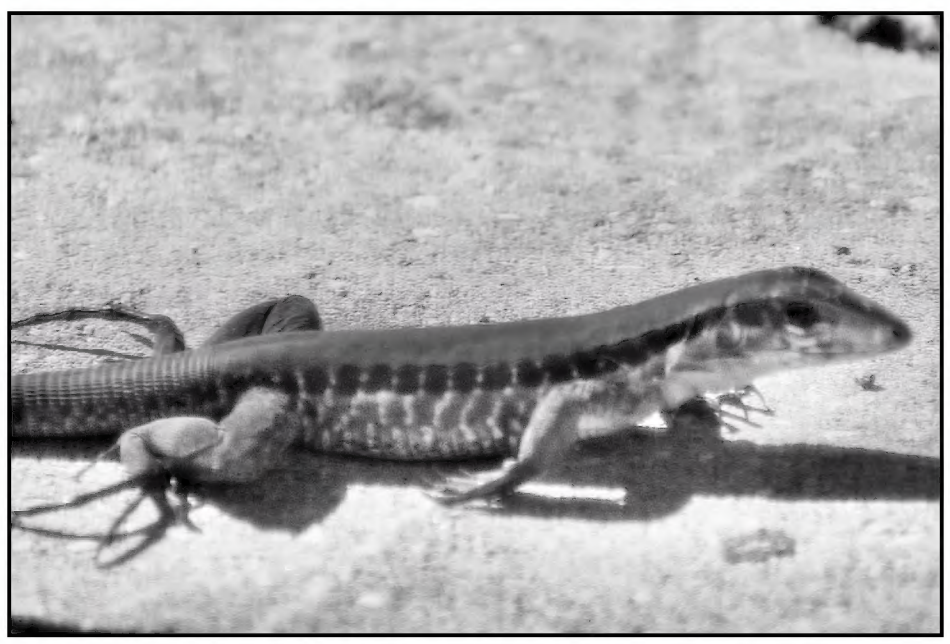
The reeds house a variety of dragonflies and damselflies (another of my interests), and the first time I walked the shore looking for those insects I was startled by the rustling of something large in the reeds. I didn't make out what it was, but just a few yards further and I spotted a small basilisk. The lizards turned out to be fairly common around the pond. On a later visit, I spotted a Florida Water Snake hidden in the reeds. I was able to photograph its head. So far, it's been the only water snake I've encountered anywhere in the area—and I've been looking!

The two other ponds at North Collier are much smaller than the first and are all but entirely surrounded by thick vegetation. After my initial encounter with basilisks around the bigger pond, I was not surprised to find these lizards, from very small ones to large adults, among the plants. What I haven't seen is a basilisk run across the water. They're famous for doing that, hence one of their colloquial names: "Jesus Christ Lizard."

Sugden Regional Park surrounds Lake Avalon, a 60-plus-acre lake that houses the only sandy freshwater beach in the area. The lake is so large that motor boats and water skiing are permitted. The body of the lake is disturbed by boaters and kayakers, but the south end of the lake is fairly natural; also, a canal runs along the south end of the park. The first time I walked the shoreline—again looking for dragonflies to photograph—I encountered many basilisks, most of which dashed away before I could photograph them. I also discovered that my camera invites inquiries from bicyclists and joggers. I've been asked many times if I was trying to photograph alligators (I would if I saw one). When I say I want to photograph snakes, I'm left alone.

Another lizard that has moved into my neighborhood is the Giant Ameiva. I first saw a large one of these lizards, its back a beautiful iridescent green, its sides barred with a series of broken white dots, outside the lanai towards the end of October 2020. Although I've learned this lizard is capable of fast moves, most I've seen, including this one, move slowly and methodically along the ground. They often bury the tips of their snouts into the mulch, and sometimes they dig up the mulch. Since then I've seen these relatives of our native Six-lined Racerunners (the only lizard I've ever encountered in Illinois and one of two native lizards I've seen in Florida) throughout the neighborhood during the day. I confess it is the only reptile that's tempted me to take one into "protective custody." The problem, of course, that it is illegal to release a nonnative species (a law I ignore removing anoles and geckos from the condo).

Sadly, the native Green (Carolina) Anole remains elusive. I can see more Brown Anoles in a single hour than all the Carolinas I've seen since we bought the place. I'm a big fan of iNaturalist (http://naturalist.org), and I've managed to record two of my four encounters with this species on that site; I've recorded the Brown Anole 18 times, and quite frankly, I seldom bother now to post a photo of this lizard unless it's from a locality I haven't previously recorded. A species that I've seen only once, but which my human neighbors claim to see all the time, is the Green Iguana. Certainly when the temperature has



Giant Ameivas search for food in the shrubbery surrounding the condos.

One of several Peter's Rock Agamas seen in Golden Gate.

dropped, I haven't seen iguanas falling out of trees.

Two species that I've seen elsewhere in Collier County are also nonnative. My first encounter with a Northern Curly-tailed Lizard, a native of Cuba, the Bahamas, and other islands in the Caribbean, was in the busy, upscale Third Street shopping area. Naturally, I had no camera, but it wouldn't have mattered much: The lizard sped off when it realized I was was watching. Since then, I've seen a few in the more urban areas of Naples (but not my own community and not in natural areas), but always when I am *sans* camera. My most recent encounter was alongside a building at Mackle Park on Marco Island. I did have my camera with me, but I was playing roadie for my wife (she was performing with a band at the park), and I was tugging a beach cart filled with woodwind instruments, a music stand, music, etc. Some day . . .

The second species had me fooled. I was again my wife's roadie, taking her to a Thursday morning rehearsal in a park adjacent to the Golden Gate Library. As the band rehearsed, I explored the park. I amused myself by photographing what I could, but there wasn't anything that novel to photograph. Eventually I wandered into the courtyard of a park district administration building, hoping to spot some butterflies or dragonflies. Then I felt like I was being watched: Sure enough, I saw a golf-ball-size lizard's head sticking out of some sort of pipe about 15 feet off the ground. As soon as I pointed my camera at it, it ducked down the pipe.

There were a couple of benches in the courtyard, so I sat down, hoping the lizard would make another showing. Just behind me I heard scratches. Turning around, I saw what I thought was a native fence lizard. It remained unaware of my presence long enough for me to take a few photos; then it scurried up the tree. Realizing that there was something besides Brown Anoles in the courtyard, I patrolled it several times, finally managing to photograph the elusive pipe lizard, as well as two different individuals on the tree where I saw the first.

Absolutely sure that I had seen fence lizards, I submitted my photos to iNaturalist. When the algorithm suggested an identity, I was disbelieving: My lizards were identified as Peter's Rock Agama (*Agama picticauda*), a species whose very existence I was unaware of. Apparently this lizard was introduced via the pet trade in 1976, and Florida wildlife officials saw its population grow rapidly during 2020. Several iNaturalist identifiers confirmed the algorithm's identification. Time will tell if this species shows up around my condo.

I have mixed feelings about all these nonnative species. I know Green Iguanas are considered garden pests where they abound, and I know the Brown Anole seems to out-compete the Green Anole. I have lots of unanswered questions, though, about the other species. For the most part they seem to confine themselves to developed areas: except for the Brown Anoles and more recently the Brown Basilisks in the two county parks, I haven't spotted any of these lizards in a natural area ("Ding" Darling Wildlife Refuge, Bird Rookery Swamp, Ten Thousand Islands Wildlife Refuge). Much like the nocturnal House Gecko, they seem to exploit an urbanized environment unoccupied by native species. Perhaps in a year or two I will see or learn something that changes my mind, but for the most part, I'm not hostile toward the ameivas, agamas, and other exotics I've encountered.

As for my other reptile (and amphibian) neighbors, there's more to tell, but that's a narrative for another day.

*Bulletin of the Chicago Herpetological Society 56(12):92-94, 2021*

# Herpetological Art in the Forest Park Turtle Playground near the Saint Louis Zoo — October 2021

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Just a few miles south of the Saint Louis Zoo — across highway US40/I-64 — is the Forest Park Turtle Playground, sometimes just called Turtle Park, with giant statues of turtles and two giant statues of snakes.

These statues include: an Eastern Snapping Turtle (*Chelydra serpentina*) that is 40 feet long (Figures 1 and 2); a Smooth Softshell Turtle (*Apalone mutica*) (Figures 3–5) that must be almost as large as the snapping turtle (there aren't any spines on the front of the shell that would make this a Spiny Softshell Turtle); what might be a Red-eared Slider (*Trachemys scripta elegans*) that I think is as long as two large pick-up trucks (Figures 6 and 7); a Map Turtle (*Graptemys* sp.) that you can ID from the saw-like ridges on its back (Figure 8); and three box turtles (Figures 9–11). These last four statues are each approximately the size of a large Galapagos tortoise.

There are seven turtle eggs near one of the concrete snakes and three of the eggs are "hatching." These eggs are approximately two feet tall. I don't know what species of turtle they are supposed to represent (Figures 12–15)

The snake statues are enormous. Each is hundreds of feet long. The longer one (Figures 16 and 17) has its mouth open as if it's going to eat something and the shorter one (Figures 18 and 19) forms a semicircle around the turtle eggs. Several feet behind the head of the shorter one the concrete was formed to create a kind of long concrete bench where people can sit, and perhaps parents can watch their children play.

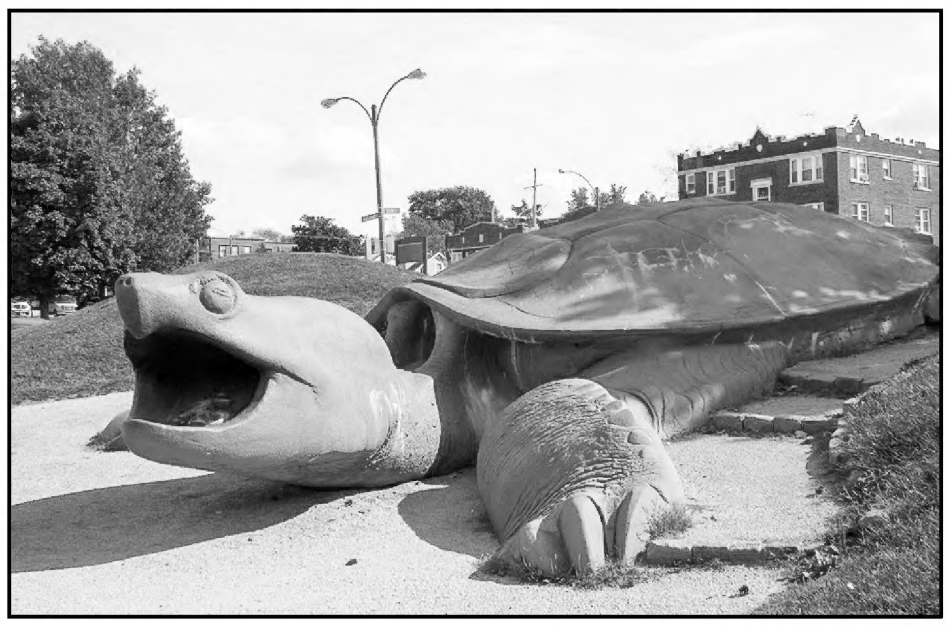


**Figure 1**.

**Figure 2**.

**Figure 3**.

**Figure 4**.

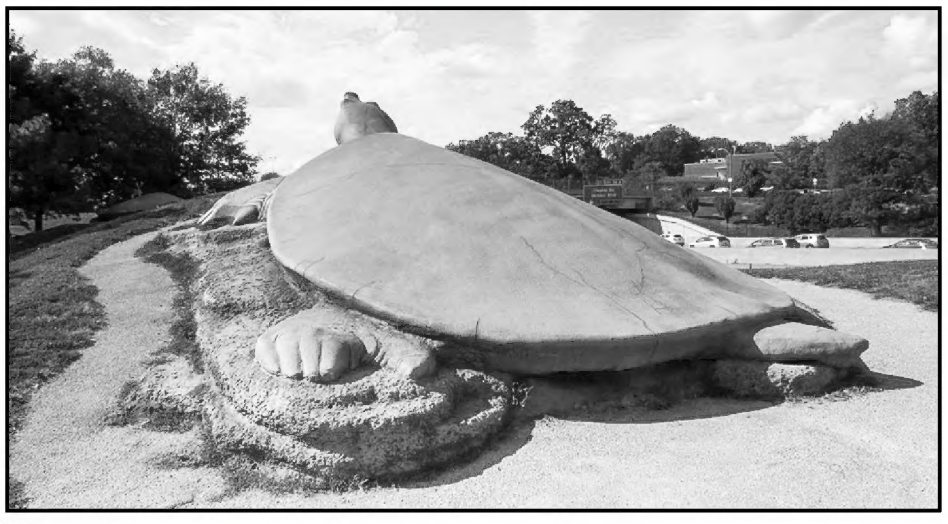
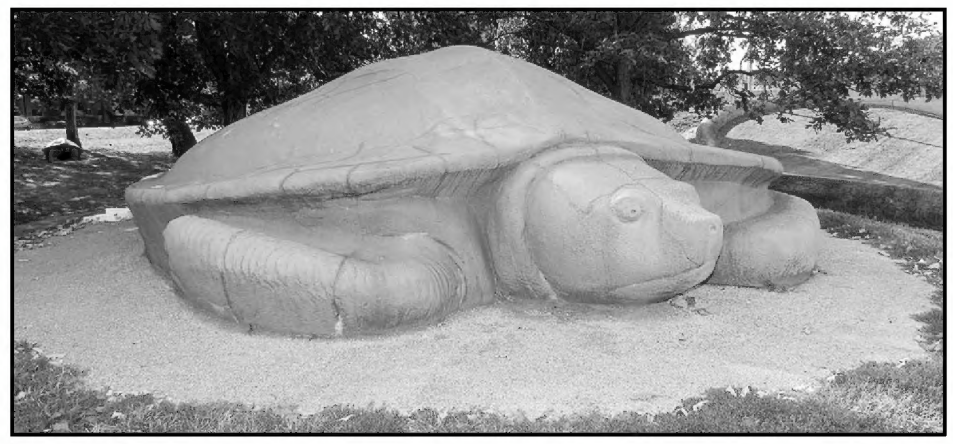


**Figure 5**.

**Figure 6**.



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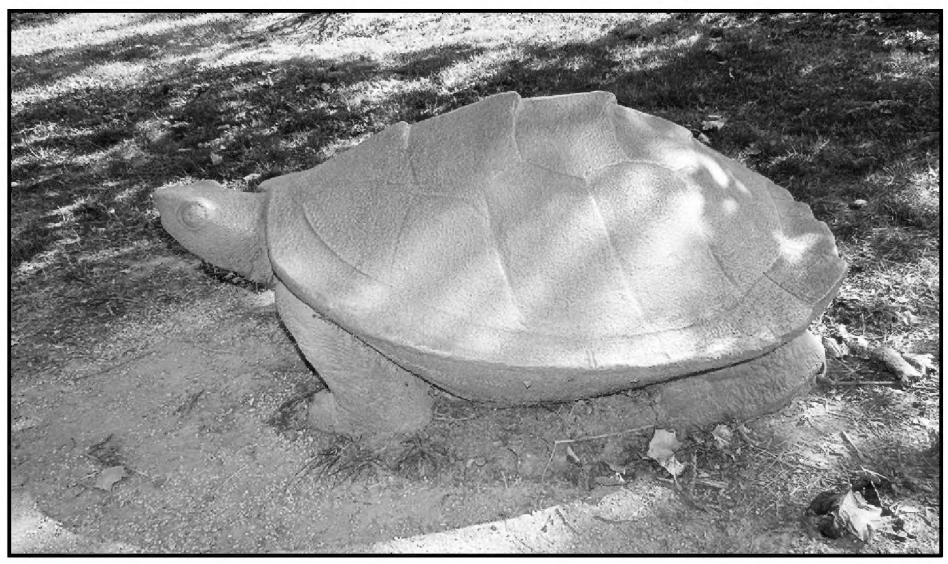

**Figure 8**.

**Figure 9**.

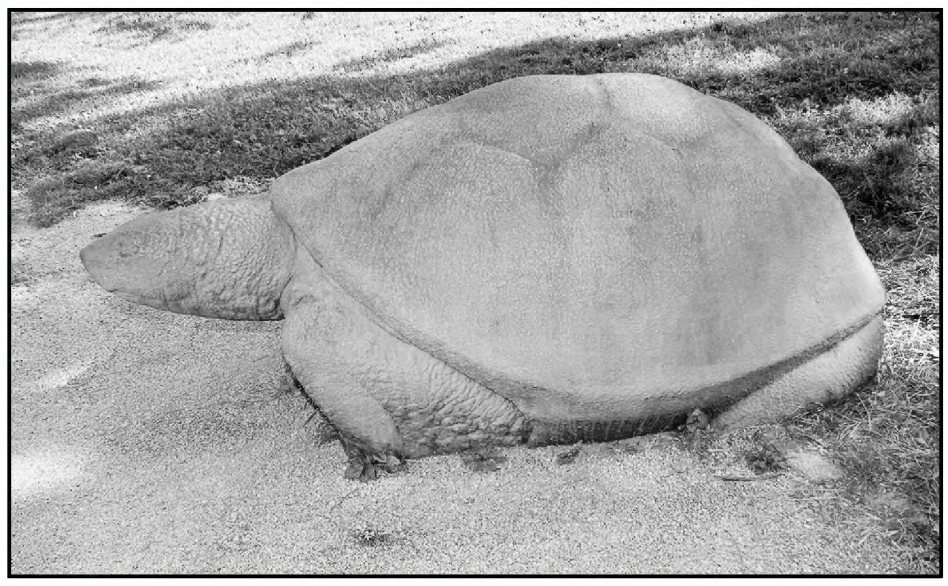

**Figure 10**.

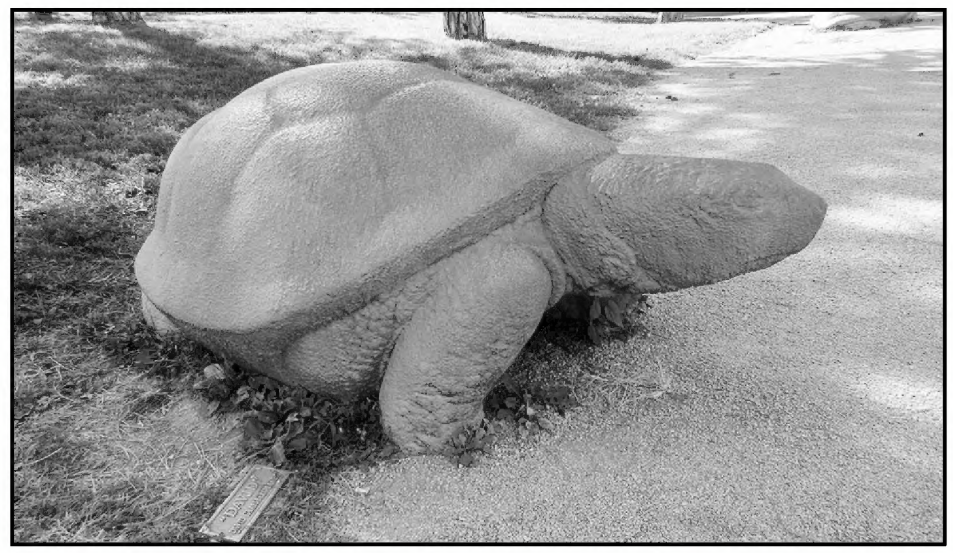

**Figure 11**.

**Figure 12**.

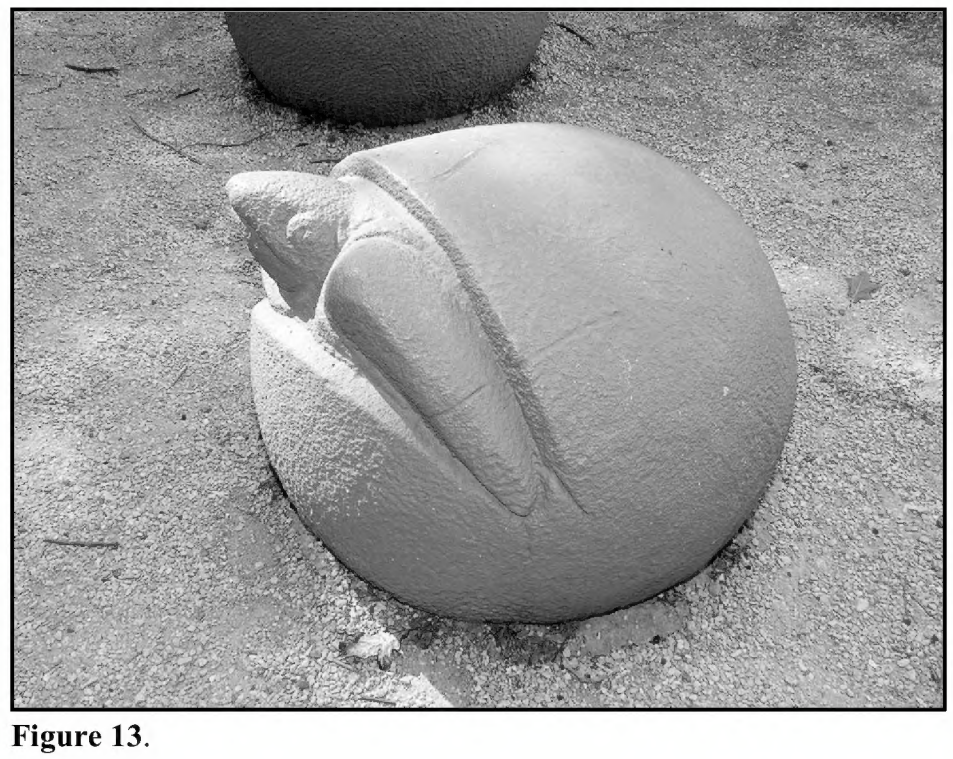

**Figure 13**.

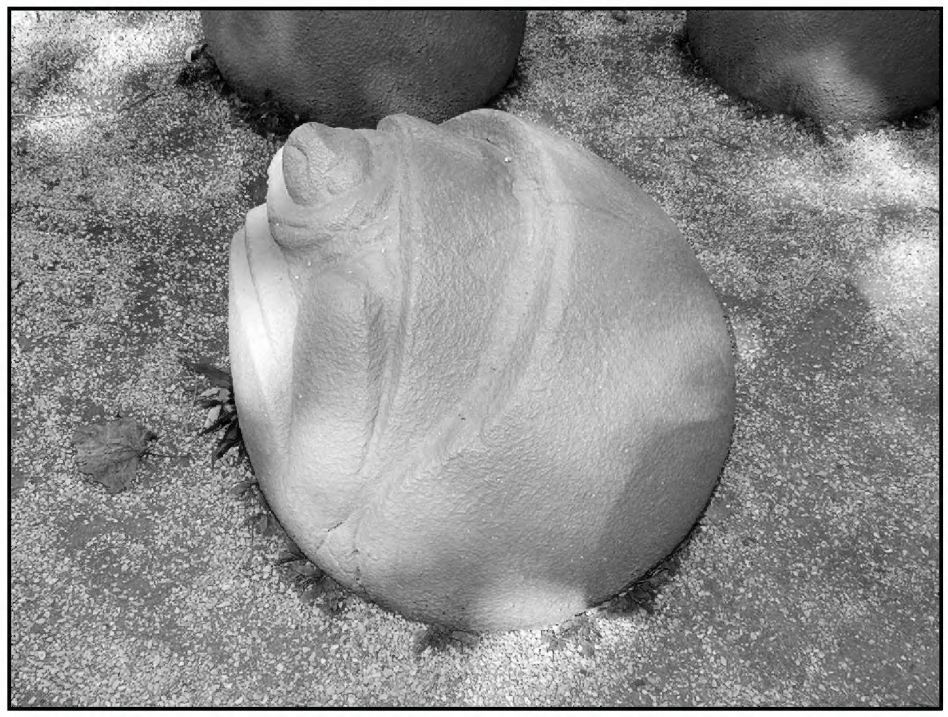

**Figure 14**.

**Figure 15**.

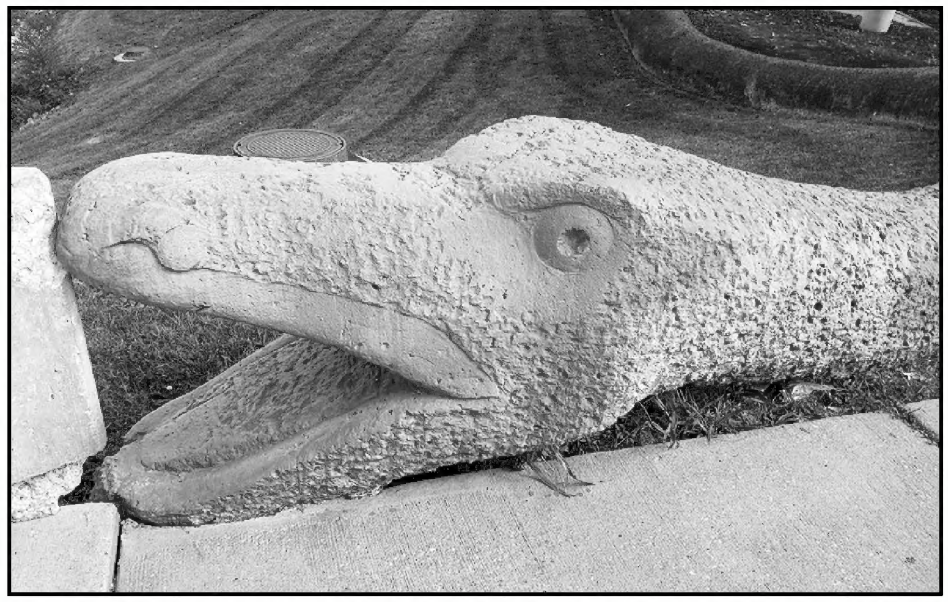

**Figure 16**.

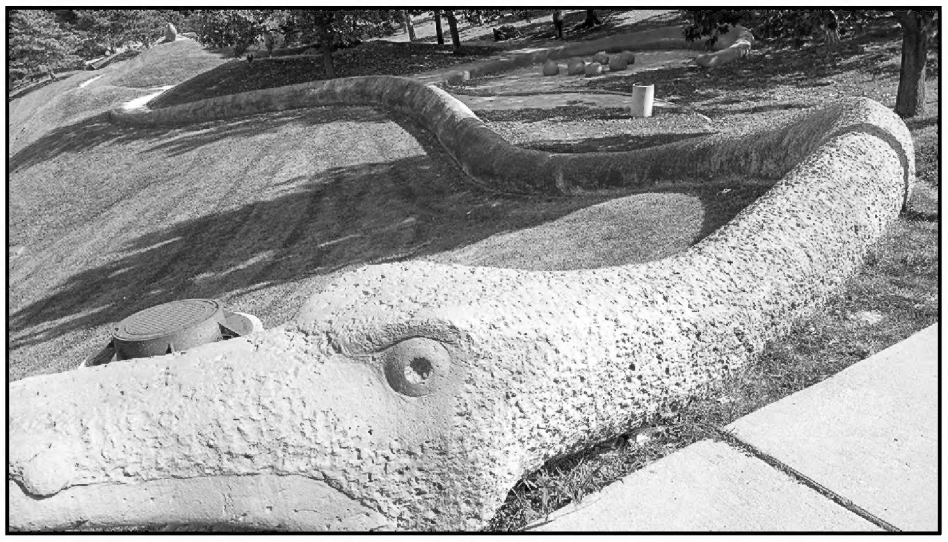

**Figure 17**.

**Figure 18**.

**Figure 19**.

*Bulletin of the Chicago Herpetological Society 57(5):95-106, 2022*

# Axial Bifurcation and Duplication in Snakes. Part IX
# Third Update on Authentic Cases

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## Abstract

A new update on cases of axial bifurcation results in 2405 total reports, an increase in more than 550 new cases since the second update by Wallach (2018). There are now representatives in 120 genera and 252 species, with 297 total taxa if subspecies are included. Statistics are revised for totals and distributions by geographic regions, snake families, dichotomy type, U.S. states, temporal reports in newspapers, and origin of specimens. Interesting trivia accounts are presented for the most unusual cases of dicephalism.

## Introduction

Two previous reports (Wallach, 2007, 2018) have summarized the known cases of axial bifurcation in snakes, mostly two-headed varieties. The first and only book on the subject (Cunningham, 1927) presented details on 225 authentic cases. In the intervening decades, many more specimens have been observed. In the first modern survey, Wallach (2007) considered 93 genera with 169 species found among 950 original reports and 1687 total records. The number of original cases was nearly doubled to 1850 (among 3190 total reports) and the known genera and species were increased to 111 and 213, respectively, by Wallach (2018). Currently there are 120 genera and 252 species recorded in 2405 original cases of axial duplication known with a total of 4120 reports. The reports can be categorized into four levels of reliability:

Level I: preserved specimens

Level II: photographic vouchers

Level III: reliable reports

Level IV: anecdotal reports

The number of cases increased over time (2007, 2018 and 2021, respectively) for the four levels of reliability as follows: I—306, 336 and 354; II—374, 740 and 953; III—216, 718 and 968; IV—54, 56 and 76.

New published accounts since Wallach (2018) include: Hileman et al. (2017); Anonymous (2018, 2019); Murphy (2018); Schramer et al. (2018); Devkota, Ghimire et al. (2020); Devkota, Magar et al. (2020); Lawmsanga et al. (2020); Paden et al. (2020); Shin et al. (2020); Vázquez-Cruz et al. (2020); Zappalorti et al. (2020); Muhammad and Rutherford (2021); Wallach and Ineich (2021).

Smith and Pérez-Higareda (1987) proposed the following seven terms to categorize axial bifurcation in snakes: craniodichotomy, prodichotomy, proarchodichotomy, urodichotomy, opisthodichotomy, amphidichotomy, and holodichotomy. A craniodichotomous specimen has two incompletely divided heads, a single atlas* and axis*, and a single body and tail. A prodichotomous snake has two complete heads, each with an atlas and axis, either a single or two short necks, and a single body and tail. A proarchodichotomous specimen has two heads, two long necks, and a single body and tail. A urodichotomous snake has one head and body but two tails. An opisthodichotomous specimen has one head, two bodies and two tails. An amphidichotomous snake has two heads, a single body, and two tails. Holodichotomy refers to a pair of twins from a single egg, usually healthy and normal but reduced in size in comparison with their siblings.

## Results

Current totals for cases of axial bifurcation include 13 snake families, 120 genera, 252 species plus 45 subspecies and 5 hybrids (*Boaedon fuliginosus* × *B. lineatus*, *Lampropeltis alterna* × *L. mexicana*, *Lampropeltis mexicana* × *L. ruthveni*, *Lystrophis pulcher* × *L. matogrossensis*, and *Pantherophis guttatus* × *P. emoryi*) (Table 1). The genera and species with the greatest number of cases are as follows. Nine genera have at least 50 different individuals: *Thamnophis* (243), *Pantherophis* (230), *Lampropeltis* (185), *Crotalus* (143), *Nerodia* (101), *Pituophis* (79), *Natrix* (66), *Elaphe* (50), and *Morelia* (50). Considering individual species, there 39 with at least 10 known cases: *Pantherophis guttatus* (140), *Thamnophis sirtalis* (121), *Lampropeltis californiae* (67), *Pituophis catenifer* (61), *Natrix natrix* (59), *Nerodia sipedon* (61), *Crotalus horridus* (51), *Lampropeltis triangulum* (50), *Pantherophis obsoletus* (42), *Agkistrodon contortrix* (37), *Morelia spilota* (33), *Pelias berus* (32), *Python regius* (28), *Boa constrictor* (29), *Lampropeltis getula* (27), *Coluber constrictor* (23), *Heterodon platirhinos* (21), *Thamnophis radix* (21), *Pantherophis spiloides* (20), *Daboia russelii* (19), *Diadophis punctatus* (18), *Pseudechis porphyriacus* (18), *Vipera aspis* (17), *Elaphe climacophora* (16), *Pituophis melanoleucus* (16), *Crotalus atrox* (15), *Heterodon nasicus* (14), *Thamnophis ordinoides* (14), *Thamnophis elegans* (13), *Pantherophis alleghaniensis* (12), *Bothrops asper* (11), *Coronella austriaca* (11), *Crotalus viridis* (11), *Elaphe bimaculata* (11), *Eryx conicus* (10), *Morelia viridis* (10), *Sistrurus catenatus* (10), *Sistrurus miliarius* (10), and *Storeria dekayi* (10).

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* In anatomy, the *atlas* is the first vertebra of the spine, so named because in a human being it supports the globe of the head. The *axis* is the second vertebra. The atlas and axis are specialized to allow a greater range of motion than normal vertebrae.

**Table 1**. Updated list of species and subspecies exhibiting axial bifurcation, arranged in phylogenetic order by family and subfamily.

Leptotyphlopidae: *Tricheilostoma bicolor*

Pythonidae: *Antaresia childreni, A. maculosa, A. stimpsoni, Aspidites melanocephalus, A. ramsayi, Liasis olivaceus, Malayopython reticulatus, Morelia amethistina, M. bredli, M. s. spilota, M. s. cheynei, M. s. mcdowelli, M. s. metcalfei, M. s. variegata, M. viridis, Python bivittatus, P. molurus, P. regius, P. sebae*

Boidae: Boinae: *Acrantophis dumerili, Boa constrictor constrictor, B. c. amarali, B. c. occidentalis, B. imperator, Corallus hortulanus, Epicrates angulifer, E. assisi, E. cenchria, E. maurus, E. striatus, Eunectes murinus, E. notaeus*

Boidae: Erycinae: *Eryx conicus, Lichanura roseofusca, L. trivirgata*

Tropidophiidae: *Tropidophis melanurus*

Viperidae: Viperinae: *Bitis arietans, B. atropos, B. gabonica, Daboia russelii, Montivipera xanthina, Pelias berus, Vipera ammodytes, V. aspis francisciredi, V. a. rubriventris, V. ursinii rakosiensis*

Viperidae: Crotalinae: *Agkistrodon c. contortrix, A. c. mokasen, A. laticinctus, A. piscivorus, Bothriechis schlegelii, Bothriopsis bilineata, B. taeniata, Bothropoides jararaca, Bothrops asper, B. atrox, B. jararacussu, B. lanceolatus, B. leucurus, B. moojeni, B. neuwiedii diporus, Crotalus adamanteus, C. atrox, C. basiliscus, C. cerastes, C. cerberus, C. durissus collilineatus, C. d. terrificus, C. helleri, C. horridus, C. l. lepidus, C. lutosus, C. mitchelli, C. molossus oaxacus, C. oreganus, C. scutulatus, C. tigris, C. triseriatus, C. vegrandis, C. viridis, Gloydius blomhoffii, G. halys, G. saxatilis, G. shedaoensis, Ovophis monticola, Protobothrops mucrosquamatus, Rhinocerophis alternatus, Sistrurus catenatus, S. miliarius barbouri, S. m. streckeri, Trimeresurus erythrurus* [not *T. albolabris*], *Tropidolaemus wagleri*

Homalopsidae: *Cerberus rynchops, C. schneiderii, Enhydris enhydris, Enhydris* sp., *Erpeton tentaculatum, Homalopsis buccata, H. mereljcoxi, Subsessor bocourti*

Lamprophiidae: *Boaedon capensis, B. fuliginosus, B. fuliginosus × B. lineatus, Duberria lutrix, Lamprophis fuscus, Lycodonomorphus inornatus, Lycophidion capense capense*

Elapidae: *Bungarus caeruleus, Hemachatus haemachatus, Naja atra, N. kaouthia, N. naja, Sinomicrurus japonicas, Uraeus haje*

Hydrophiidae: Oxyuraninae: *Acanthophis wellsi, Austrelaps praelongus, A. superbus, Drysdalia coronoides, Notechis scutatus, Ogmodon vitianus, Oxyuranus scutellatus, Pseudechis australis, P. colletti, P. porphyriacus, Pseudonaja affinis, P. textilis*

Hydrophiidae: Hydrophiinae: *Aipysurus laevis, Hydrophis cyanocinctus, H. spiralis, Pelamis platura*

Dipsadidae: *Carphophis amoenus*, *Contia tenuis*, *Diadophis punctatus*, *Heterodon nasicus*, *H. platirhinos*, *H. simus*, *Leptodeira annulata ashmeadii*, *Sibon* sp., *Sibynomorphus mikanii*

Xenodontidae: *Echinanthera cyanopleura, Erythrolamprus aesculapii, Helicops carinicauda infrataeniata, Hydrodynastes gigas, Liophis almadensis, L. miliaris semiaureus, L. perfuscus, L. poecilogyrus, Lystrophis pulcher × L. matogrossensis, Philodryas olfersii, P. patagoniensis, Thamnodynastes chilensis, Xenodon merremii, X. severus*

Colubridae: Boiginae: *Boiga dendrophila, B. drapiezii, Crotaphopeltis hotamboeia, Macroprotodon cucullatus*

Colubridae: Psammophiinae: *Psammophylax rhombeatus*

Colubridae: Colubrinae: *Ahaetulla mycterizans, Cemophora coccinea, Coelognathus helena, Coluber c. constrictor, C. c. priapus, Coronella austriaca, Dendrelaphis fuliginosus, Dinodon rufozonatum, D. septentrionale, Dolichophis jugularis, D. schmidti, Drymarchon couperi, D. melanurus, Elaphe bimaculata, E. climacophora, E. dione, E. quadrivirgata, E. quatuorlineata, E. sauromates, E. schrenckii, E. situla, Euprepiophis conspicillatus, E. mandarinus, Hemorrhois hippocrepis, H. ravergieri, Hierophis viridiflavus, Lycodon aulicus, L. osmanhilli, Masticophis flagellum, M. lateralis, Mastigodryas melanolomus, Oligodon arnensis, O. barroni, O. joynsoni, Oocatochus rufodorsatus, Opheodrys aestivus, O. vernalis, Oreocryptophis porphyraceus coxi, Orthriophis taeniurus, Oxybelis rutherfordi, Philothamnus semivariegatus, Platyceps florulentus, Ptyas korros, P. mucosus, Ptyas* sp., *Zamenis longissimus, Z. scalaris*

Colubridae: Dasypeltinae: *Dasypeltis scabra*

Colubridae: Lampropeltinae: *Arizona elegans, Lampropeltis alterna, L. alterna × L. mexicana, L. californiae, L. calligaster, L. elapsoides, L. g. getula, L. g. floridana, L. g. nigrita, L. holbrooki, L. leonis, L. m. mexicana, L. m. thayeri, L. mexicana × L. ruthveni, L. nigra, L. pyromelana, L. splendida, L. t. triangulum, L. t. campbelli, L. t. gaigeae, L. t. hondurensis, L. t. nelsoni, L. t. sinaloae, L. webbi, L. zonata, Pantherophis alleghaniensis, P. emoryi, P. gloydi, P. guttatus, P. guttatus × P. emoryi, P. o. obsoletus, P. obsoletus lindheimeri, P. spiloides, P. vulpinus, Pituophis c. catenifer, P. c. affinis, P. c. annectens, P. c. deserticola, P. c. pumilis, P. c. sayi, P. m. melanoleucus, P. m. mugitus, Pseudelaphe flavirufa*

Natricidae: Natricinae: *Fowlea piscator, Hebius vibakari, Natrix maura, N. n. natrix, N. n. helvetica, N. n. lanzai, N. tessellata, Rhabdophis tigrinus, Trimerodytes annularis*

Natricidae: Thamnophiinae: *Nerodia c. clarkii, N. c. compressicauda, N. e. erythrogaster, N. e. transversa, N. f. fasciata N. f. confluens, N. floridana, N. rhombifer, N. s. sipedon, N. s. pleuralis, N. taxispilota, Regina rigida, R. septemvittata, Storeria dekayi, S. occipitomaculata, Thamnophis atratus, T. couchii, T. cyrtopsis, T. e. elegans, T. e. biscutatus, T. e. infernalis, T. e. terrestris, T. e. vagrans, T. eques, T. gigas, T. hammondii, T. marcianus, T. ordinoides, T. r. radix, T. r. haydeni, T. sauritus sauritus, T. sirtalis sirtalis, T. s. concinnus, T. s. fitchi, T. s. infernalis, T. s. parietalis, T. s. pickeringii, T. s. tetrataenia, Tropidoclonion lineatum*

**Table 2**. Distribution of cases (n = 2405) by geographic region and level of reliability (I = preserved specimens; II = photographic vouchers; III = reliable reports; IV = anecdotal reports).

| Region | I | II | III | IV | Total |
|---|---|---|---|---|---|
| North America | 150 | 590 | 788 | 58 | 1586 |
| Asia | 45 | 146 | 34 | 3 | 228 |
| Europe | 69 | 70 | 50 | 10 | 199 |
| Australia-Indonesia | 17 | 65 | 79 | 2 | 163 |
| South America | 44 | 34 | 11 | 0 | 89 |
| Africa-Madagascar | 19 | 46 | 9 | 3 | 77 |
| Mesoamerica-Caribbean | 15 | 37 | 3 | 0 | 55 |
| **Unknown** | 0 | 7 | 1 | 0 | 8 |
| **Known** | 359 | 988 | 975 | 75 | 2397 |
| **Total** | 359 | 995 | 976 | 75 | 2405 |

Table 2 displays the breakdown of cases by geographic region with the majority of records (66.0%) originating from the USA and Canada, followed by Asia (9.5%), Europe (8.3%), and Australia-Indonesia 6.8%). Distribution of cases by family (Table 3) reveals that most specimens are colubrids (28.1%), natricids (18.3%), and viperids (14.3%). Table 4 illustrates the division of cases by type of bifurcation with prodichotomous (55.9%) and craniodichotomous (31.0%) forming the majority of records, the other four conditions only appearing in 1.0–5.0% of total cases. Regarding the distribution of dicephalics in the USA, the three leading states are California (10.7%), Texas (7.8%), and Pennsylvania (7.0%), whereas Rhode Island has the distinction of being the only state without a two-headed snake report (Table 5). Table 6, a comparison of the original newspaper accounts of two-headed snakes by day of the week, reveals that most reports have been published in Thursday papers (21.4%) and fewest in Sunday papers (9.7%). Lastly, Table 7 reveals that approximately 20% of dicephalic records originate from captive-bred individuals with the other 80% being snakes found in the wild.

Pet names of two-headed snakes are not unique and a few names have been used for more than one individual (and they are numbered in my records in chronological order with Roman numeral suffixes). I have recorded 165 different pet names for two-headed snakes, of which 47 are single epithets and 118 are dual names. The most common names for a dicephalic snake are the following: seven "Medusa" (Medusa I = *Pituophis catenifer*, Medusa II = *Python regius*, Medusa III = *Pantherophis obsoletus*, Medusa IV = *Lampropeltis triangulum hondurensis*, Medusa V = *Lampropeltis californiae*, Medusa VI = *Pantherophis guttatus*, Medusa VII = *Lampropeltis holbrooki*), five "Double Trouble" (Double Trouble I = *Lampropeltis californiae*, Double Trouble II = *Crotalus viridis*, Double Trouble III = *Crotalus horridus*, Double Trouble IV = *Coluber constrictor*, Double Trouble V = *Pantherophis alleghaniensis*), four "Hydra" (Hydra I = *Boa constrictor*, Hydra II = *Pantherophis guttatus*, Hydra III = *Lampropeltis holbrooki*, Hydra IV = *Heterodon nasicus*), three "Laverne & Shirley" (Laverne & Shirley I = *Pantherophis spiloides*, Laverne & Shirley II = *Lampropeltis pyromelana*, Laverne & Shirley III = *Pantherophis guttatus*), 3 "Them" (Them I = *Pantherophis obsoletus*, Them II = *Pituophis melanoleucus*, Them III = *Pantherophis guttatus*), and three "Tom & Jerry" (Tom & Jerry I = *Lampropeltis californiae*, Tom & Jerry II = *Lampropeltis californiae*, Tom & Jerry III = *Heterodon nasicus*). Species having at least five different pet names are *Pantherophis guttatus* (25 names), *Lampropeltis californiae* (22 names), *Pantherophis obsoletus* (10 names), *Pantherophis spiloides* (9 names), *Crotalus atrox* (7 names), *Crotalus horridus* (7 names), *Lampropeltis t. hondurensis* (6), *Pituophis c. annectens* (6 names), *Heterodon nasicus* (5 names), *Lampropeltis t. triangulum* (5 names), and *Thamnophis sirtalis* (5 names). One of the more unusual names was for a two-headed kingsnake (*Lampropeltis getula*) found by Elijah Johnson and Charles Roberts in October 1942; it was named "Hitler & Mussolini" after the fascist leaders (Anonymous, 1942).

**Table 3**. Distribution of cases (n = 2405) by family and level of reliability (I = preserved specimens; II = photographic vouchers; III = reliable reports; IV = anecdotal reports).

| Family | I | II | III | IV | Total |
|---|---|---|---|---|---|
| Colubridae | 89 | 436 | 147 | 4 | 677 |
| Natricidae | 102 | 158 | 176 | 4 | 440 |
| Viperidae | 79 | 113 | 176 | 4 | 344 |
| Pythonidae | 2 | 84 | 19 | 1 | 106 |
| Boidae | 16 | 38 | 10 | 0 | 64 |
| Dipsadidae | 6 | 32 | 24 | 0 | 62 |
| Hydrophiidae | 17 | 10 | 29 | 0 | 56 |
| Xenodontidae | 16 | 7 | 1 | 0 | 24 |
| Lamprophiidae | 6 | 9 | 2 | 0 | 17 |
| Homalopsidae | 5 | 10 | 1 | 0 | 16 |
| Elapidae | 3 | 13 | 0 | 0 | 16 |
| Tropidophiidae | 1 | 1 | 1 | 0 | 3 |
| Leptotyphlopidae | 1 | 0 | 0 | 0 | 1 |
| **Unknown** | 16 | 84 | 395 | 57 | 552 |
| **Known** | 343 | 911 | 586 | 13 | 1853 |
| **Total** | 359 | 995 | 981 | 70 | 2405 |

Living two-headed snakes often have a dominant head that controls most (or all) of the feeding, drinking, and locomotive behavior. Based upon 119 records of live dicephalics presented by their keepers, concerning which head was dominant, the data show that 41 snakes were left-headed (34.4%), 51 snakes were right-headed (42.9%), and 27 snakes had no dominant head

**Table 4**. Distribution of cases (n = 2351) by bifurcation type and level of reliability (I = preserved specimens; II = photographic vouchers; III = reliable reports; IV = anecdotal reports).

| Bifurcation type | I | II | III | IV | Total |
|---|---|---|---|---|---|
| Prodichotomous | 125 | 450 | 154 | 4 | 733 |
| Craniodichotomous | 110 | 264 | 31 | 2 | 407 |
| Proarchodichotomous | 6 | 52 | 7 | 0 | 65 |
| Amphidichotomous | 12 | 17 | 20 | 1 | 50 |
| Urodichotomous | 3 | 8 | 30 | 1 | 42 |
| Opisthodichotomous | 7 | 5 | 2 | 0 | 14 |
| **Unknown** | 91 | 157 | 724 | 68 | 1040 |
| **Known** | 263 | 796 | 244 | 8 | 1311 |
| **Total** | 354 | 953 | 968 | 76 | 2351 |

(22.7%). So nearly half of the dicephalics for which we have records are right-headed, a third are left-headed, and a fifth are co-dominant.

**Dicephalic Snake Trivia**

There are a considerable number of erroneous reports of two-headed snakes having a head at each end of the body, a condition that is biologically impossible. These are most likely due to observational error (Cunningham, 1933). Such reports are always discarded although it is possible, with the vagaries of news reporting, that they involve actual cases of dicephalism but were reported as having a head at each end. On the other hand, sometimes the report of a genuine two-headed snake turns out to be false. A two-headed sea serpent skeleton, 20 m long and weighing 63,500 kg was reported to have washed up on Rakahanga Island, Cook Islands, by a tsunami on 17 March 1899. The remains were transported by the steamer *Emu* to the Australian Museum in Sydney (Anonymous, 1899a). The "sea serpent" was discovered by zoologists to be composed of a pair of beaked whale (ziphoid) skulls along with dislocated vertebrae and ribs that apparently washed up together onshore (pers. comm., Glenn Shea).

Up until the first quarter of the 19th century, the general belief was that two-headed snakes composed a separate and distinct species. As late as 1891 it was claimed that the frequency of two-headed snakes leads one to believe in the existence of a dicephalic species (Dareste, 1891). However, Mitchill (1826) first demonstrated that two-headed snakes were monsters or mutations of normal snakes. He based his theory upon the discovery in 1823 of a communal nest in New York of hatching black racers containing 120 eggs, three of the neonates exhibiting axial bifurcation to various degrees. Two snakes were craniodichotomous while the third was amphidichotomous, having two heads, three eyes, one mandible, and two bodies and tails. The occurrence of three two-headed snakes within the clutch of normal individuals presented convincing evidence that two-headed snakes were, in fact, mutations.

Most two-headed snakes are discovered by accident shortly after birth in the wild or are found among captive-born individuals. Occasionally a dicephalic snake is discovered in an unusual way. For example, when Earl Williams's father, of Sterling, Illinois, was a boy in 1870 he caught a two-headed snake and kept it for a pet. After accidentally stepping on it in 1876 and killing it, he preserved it in a bottle of alcohol (Anonymous, 1876). In 1932 (55 years later) Earl Williams discovered his father's snake in the attic of his house (Anonymous, 1932). Mrs. T. G. Johnson of North Wilkesboro, North Carolina, was surprised to find a two-headed snake while spring-cleaning in 1955 that had been killed and preserved in 1895 by a relative 60 years earlier (Anonymous, 1955a). Then there is the following case. On 25 August 1902, while workmen were excavating beneath a building that was previously a drug store in Clare, Iowa, they discovered a partly buried keg of whiskey. Thinking they had found a well-aged liquor to drink, they drained it into a bottle only to discover a 250 mm rattlesnake (*Crotalus horridus*) was coiled inside (Anonymous, 1902). In March 1925 construction workers digging the foundation for a new building in Glen

**Table 5**. Distribution of cases (n = 1464) by state in the contiguous USA and level of reliability (I = preserved specimens; II = photographic vouchers; III = reliable reports; IV = anecdotal reports).

| **State** | I | II | III | IV | Total |
|---|---|---|---|---|---|
| California | 19 | 55 | 58 | 2 | 134 |
| Texas | 7 | 31 | 56 | 4 | 98 |
| Pennsylvania | 8 | 13 | 66 | 1 | 88 |
| New York | 6 | 20 | 36 | 3 | 65 |
| Virginia | 5 | 14 | 38 | 4 | 61 |
| Oregon | 9 | 14 | 33 | 3 | 59 |
| Georgia | 2 | 7 | 48 | 1 | 58 |
| North Carolina | 7 | 14 | 19 | 2 | 42 |
| Florida | 4 | 33 | 17 | 2 | 56 |
| Ohio | 4 | 7 | 33 | 2 | 46 |
| Illinois | 6 | 8 | 18 | 1 | 36 |
| Missouri | 2 | 12 | 21 | 1 | 36 |
| Indiana | 2 | 9 | 24 | 0 | 35 |
| Iowa | 1 | 10 | 18 | 2 | 31 |
| Kentucky | 1 | 4 | 25 | 1 | 31 |
| Massachusetts | 10 | 7 | 9 | 4 | 30 |
| Kansas | 1 | 11 | 13 | 3 | 28 |
| Tennessee | 2 | 8 | 14 | 2 | 26 |
| South Carolina | 0 | 4 | 19 | 0 | 23 |
| Michigan | 3 | 3 | 15 | 1 | 22 |
| Wisconsin | 0 | 4 | 15 | 1 | 20 |
| West Virginia | 0 | 3 | 14 | 1 | 18 |
| Alabama | 2 | 7 | 8 | 0 | 17 |
| Washington | 0 | 6 | 10 | 0 | 16 |
| Maryland | 3 | 4 | 8 | 0 | 15 |
| Arizona | 1 | 11 | 2 | 0 | 14 |
| Nebraska | 0 | 6 | 8 | 0 | 14 |
| Oklahoma | 0 | 4 | 10 | 0 | 14 |
| Arkansas | 1 | 7 | 5 | 0 | 13 |
| New Jersey | 0 | 6 | 7 | 0 | 13 |
| Connecticut | 1 | 0 | 10 | 1 | 12 |
| Minnesota | 0 | 6 | 5 | 0 | 11 |
| Mississippi | 2 | 4 | 3 | 1 | 10 |
| Idaho | 0 | 2 | 4 | 2 | 8 |
| Louisiana | 1 | 3 | 4 | 0 | 8 |
| Utah | 3 | 1 | 2 | 1 | 7 |
| Maine | 1 | 1 | 4 | 0 | 6 |
| New Hampshire | 1 | 1 | 4 | 0 | 6 |
| Colorado | 0 | 3 | 1 | 0 | 4 |
| Montana | 1 | 3 | 0 | 0 | 4 |
| New Mexico | 0 | 0 | 4 | 0 | 4 |
| Delaware | 0 | 1 | 2 | 0 | 3 |
| Nevada | 0 | 1 | 2 | 0 | 3 |
| South Dakota | 0 | 2 | 1 | 0 | 3 |
| North Dakota | 0 | 1 | 0 | 1 | 2 |
| Vermont | 0 | 1 | 0 | 1 | 2 |
| Wyoming | 0 | 0 | 1 | 0 | 1 |
| Rhode Island | 0 | 0 | 0 | 0 | 0 |
| **Unknown** | 32 | 131 | 41 | 7 | 211 |
| **Known** | 116 | 372 | 714 | 48 | 1253 |
| **Total** | 148 | 503 | 755 | 55 | 1464 |

**Table 6**. Distribution of first reported newspaper cases (n = 896) by day of the week and level of reliability (I = preserved specimens; II = photographic vouchers; III = reliable reports; IV = anecdotal reports).

| Day of week | I | II | III | IV | Total | % |
|---|---|---|---|---|---|---|
| Sunday | 1 | 19 | 64 | 3 | 87 | 9.7 |
| Monday | 1 | 10 | 60 | 3 | 74 | 8.3 |
| Tuesday | 1 | 21 | 93 | 3 | 118 | 13.2 |
| Wednesday | 0 | 14 | 96 | 5 | 115 | 12.8 |
| Thursday | 2 | 27 | 153 | 10 | 192 | 21.4 |
| Friday | 3 | 22 | 141 | 4 | 170 | 19 |
| Saturday | 0 | 23 | 116 | 1 | 140 | 15.6 |
| **Total** | 8 | 136 | 723 | 29 | 896 | 100 |

**Table 7**. Distribution of cases (n = 1591) by origin of the specimen and level of reliability (I = preserved specimens; II = photographic vouchers; III = reliable reports; IV = anecdotal reports).

| Origin | I | II | III | IV | Total | % |
|---|---|---|---|---|---|---|
| Wild-caught | 168 | 299 | 763 | 47 | 1277 | 80.3 |
| Captive-bred | 40 | 237 | 35 | 2 | 314 | 19.7 |
| **Total** | 208 | 536 | 798 | 49 | 1591 | 100 |

Cove, New York, discovered a jar containing a preserved two-headed snake buried 2 m deep in the ground (Anonymous, 1925). Also, a two-headed snake of unknown identity was found in 1927 when it approached the campfire of moonshiners making an illegal run of liquor (Anonymous, 1927). In October 1970 a dicephalic rattlesnake (*Crotalus viridis*) was found by four teens from the West Texas Children's Home in Pyote, Texas, in the former World War II Air Force base that was named the Pyote Rattlesnake Bomber Base. The snake was sold to the Million Dollar Museum for $500 by Catarino Sosa, the boy who caught the snake, and now resides as a dried exhibit in the museum at the entrance to Carlsbad Caverns National Monument (Anonymous, 1970b).

In one case a dicephalic snake led to a 40-year family reunion and a huge inheritance. On 17 October 1905, William Bigham killed a two-headed gartersnake (*Thamnophis sirtalis*) in Danbury, Connecticut. The incident was reported in some newspapers. Daniel Bigham of Arcadia, Wisconsin, was the brother of William's father and the two siblings had been separated for 40 years. After Daniel read the snake story he contacted William to find out if he was his nephew. If so, he wanted to inform him that he was to inherit Daniel's 1000-acre farm because he was in declining health and had no relative left to care for him (Anonymous, 1905, 1906). And a bizarre coincidence occurred along the Shenandoah River, at the base of the Massanutten Mountains, in Virginia. On 22 October 1904 a farmer's boy caught a two-headed water moccasin (most likely a harmless watersnake of the genus *Nerodia*) in the same spot where one was killed and preserved exactly 50 years previously (Anonymous, 1904).

Leonard Sonnenschein, owner of the famous dicephalic, amelanistic, 1.2-m black ratsnake (*Pantherophis spiloides*) named "We" (Figure 1) that resided for eight years in the City Museum, St. Louis, Missouri, believed that his two-headed snake was hermaphroditic and he tried to breed it (unsuccessfully) with another dicephalic, albino *P. spiloides* from Wisconsin named "Golden Girls." "We" was purchased for $15,000 in 1999 and was stolen in 2004 from the zoo by Brandon Smith (age 18), but was recovered by police the next day. "We" was placed on eBay (for one day only in violation of rules against live animals) at an auction price of $150,000 in January 2006, without any takers (highest offer was eventually $50,000). "We" died in 2007 at the age of eight and was reportedly stuffed and mounted for display in the museum (Anonymous, 2004, 2006). However, before there was a rule against selling live animals through eBay, a dicephalic copperhead (*Agkistrodon contortrix*) from Beaulaville, North Carolina, was listed on eBay for $30 in September 1975 and ended up going to Bill Haast at the Miami Serpentarium (Anonymous, 1975). Sonnenschein also held the Guinness World Record for the largest exhibit of two-headed animals when, between 22 August and 5 September 2006, he exhibited 11 live snakes and turtles with two heads (Guinness World Record Book, 2006). Also, "We" was not the only two-headed snake robbery on record. On 11 August 1970 thieves broke into a San Francisco reptile shop owned by Wade Farrel and stole 80 snakes, including a two-headed gophersnake (*Pituophis catenifer*) that was never recovered (Anonymous, 1970a).

Some dicephalic snakes have been labeled as schizophrenic. A two-headed European adder (*Pelias berus*), collected in September 1948 near Stockholm, Sweden, was reported to have a split personality with one head being gentle and the other wicked (Anonymous, 1948). A two-headed Texas ratsnake (*Pantherophis spiloides*) named "Double Jeopardy," resident of the Fort Worth Zoo in 1961, was considered to have a split personality by the zoo's curator, Lawrence Curtis, with one head being an introvert and the other an extrovert (Anonymous, 1961b). Even more interesting is an Indiana amphidichotomous snake (*Pantherophis spiloides*) with two heads and two tails that was collected in July, 1899, by George Sloan and was believed to be a composite of two different species, one head being a blacksnake (*P. spiloides*) and the other a cowsnake (*P. vulpinus*) (Anonymous, 1899b).

A few two-headed snakes have been television and movie celebrities. "Dudley Duplex" I, a California kingsnake (*Lampropeltis californiae*) at the San Diego Zoo that once held the dicephalic longevity record (of 6.5 years from Oct. 1953–May 1960) appeared in one episode of Art Baker's TV show "You Asked for It" on 28 August 1955 whereas "Dudley Duplex" II,

**Figure 1**. Amelanistic black ratsnake named "We."

also a *Lampropeltis californiae* and resident of the San Diego Zoo, aired on Johnny Carson's "The Tonight Show" in 1971 (Anonymous, 1955b). Another TV personality was "Thelma & Louise," a 1.5 m prodichotomous cornsnake (*Pantherophis guttatus*), who was captive bred from two wild-caught Florida parents by Craig Trumbower and lived 16 years (1984–2000), being purchased by the San Diego Zoo in 1991 for $3500, and who appeared on Johnny Carson's "Tonight Show" in 1991 (Anonymous, 1984). "Gertrude," a 1.8-m Florida pinesnake (*Pituophis melanoleucus mugitus*), originally owned by Dan DiGiacomo and Jerry Dwyer of "The World's Largest Pet Store" in Miami, was sold for $5,000 to Lou Russo of "Wonderful World of Pets" in Santa Ana, California. "Gertrude" lived for more than 16 years and stared in the 1980 movie, *Resurrection* (Anonymous, 1972). An unidentified two-headed snake, belonging to Ellen DeGeneres and Anne Heche, was displayed on Craig Kilborn's "The Late Late Show" on 21 January 2000. A dicephalic ring-necked snake (*Diadophis punctatus*) from the Great Smoky Mountains, Tennessee, was the star of a TV show "The Reptiles: Snakes" that aired on 9 February 2003 (Biskup, 2003). A TV show entitled "Two-headed animals" that aired on 21 January 2004 showed footage of a steppe ratsnake (*Elaphe dione*) from some Asian country (Avery, 2004). It was reported on 21 November 2007 that the TSA screeners at Newark Airport once had a shocking discovery. They found a two-headed snake in some checked baggage that was being carried by a zoo curator. The snake was to appear on the "Live with Regis and Kelly" TV show (Anonymous, 2007; Loren, 2007). Conan O'Brien, host of "The Tonight Show," exhibited an unidentified dicephalic snake on 28 August 2009.

Circuses and sideshows are known for their occasional displays of two-headed snakes. According to Joe Evens, one of the attractions exhibited at the 1893 World's Exposition in Chicago was a two-headed snake (Anonymous, 1893). A dicephalic gartersnake (*Thamnophis* sp.) collected seven miles from Rogue River, Oregon, in October 1921 was purchased by Mrs. Gunning Davis for $2.00 from a local fisherman and sold to the Leavitt-Brown-Huggins carnival for exhibition (Anonymous, 1921). Another carnival or circus that had a two-headed snake on exhibit was Dodson's, appearing in Bryan, Texas, from 27 October to 1 November 1930 (Anonymous, 1930). And a gravid rattlesnake (*Crotalus* sp.) on exhibit at the Ohio State Fair in Columbus on 27 August 1969 gave birth to a two-headed neonate (Anonymous, 1969).

It is common knowledge that survival of two-headed snakes in the wild is extremely unlikely due to the uncoordinated messages to the body for a unified effort to either catch prey or escape from predators. Cats are the predator responsible for most captures or kills of dicephalic snakes. An example of that comes from a dicephalic brown housesnake (*Boaedon capensis*) that killed when fighting with a domestic cat on 7 June 1896 on the F. Newdigate estate, Cape Colony, South Africa (Anonymous, 1896b: see Figure 2).

Famous and infamous people who owned two-headed snakes include the following: 1) Benjamin Franklin owned a dicephalic kingsnake (*Lampropeltis getula*) that was collected in July 1787 near the junction of the Schuylkill and Delaware rivers near

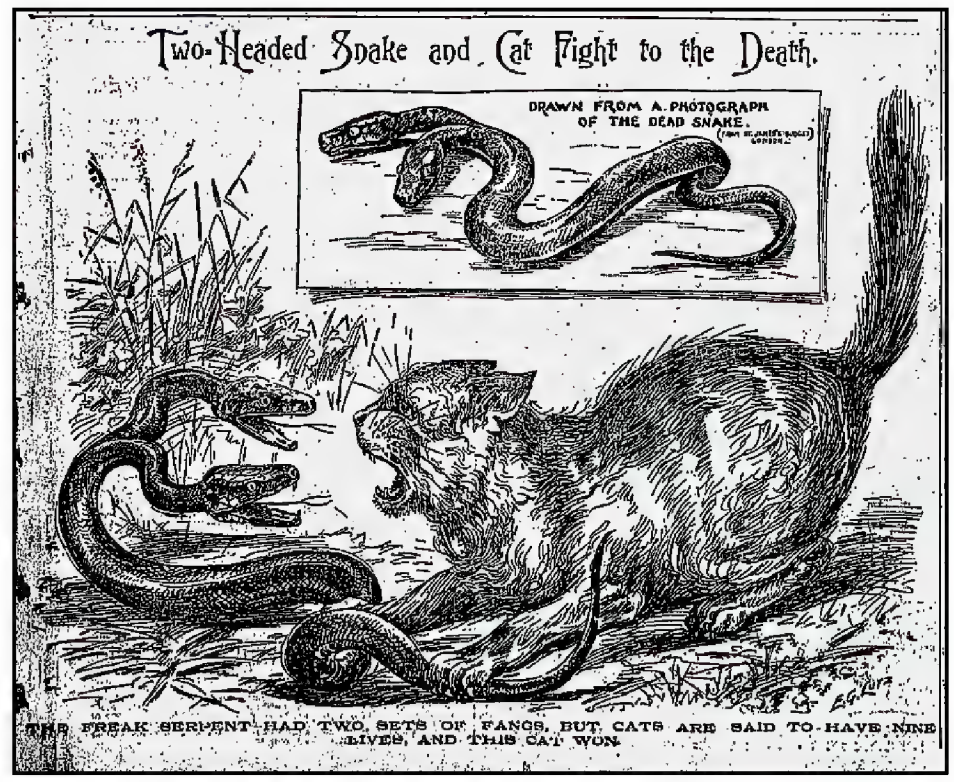
Two-Headed Snake and Cat Fight to the Death.
DRAWN FROM A PHOTOGRAPH OF THE DEAD SNAKE.
THE FREAK SERPENT HAD TWO SETS OF FANGS, BUT CATS ARE SAID TO HAVE NINE LIVES, AND THIS CAT WON.

**Figure 2**.

Philadelphia (Anonymous, 1868); 2) The king of France, Louis XVI, possessed a craniodichotomous pitviper (*Bothrops lanceolatus*) collected in Martinique (Lacépède, 1789). It formerly resided in the Cabinet de Sa Majesté but is now lost (Wallach and Ineich, 2021); 3) Will "Steamboat" Davis of South Africa was a snake collector for P. T. Barnum, and the circus's only dicephalic snake (*mambroa* or *nkajnij*) was collected by him. Davis eventually came to the USA and worked for Barnum but ended up serving a life sentence in prison (Anonymous, 1923); 4) Marguerite de La Motte, a fashionable movie actress of the 1920's, wore a bracelet made of a dried and stuffed (taxidermied) two-headed "rattlesnake" [probably a *Lampropeltis californiae*] (Anonymous, 1924); 5) Billy Rose, a circus man in Texas and Ohio who produced shows in the 1930s and 1940s, kept a dicephalic snake in his office (Anonymous, 1940); 6) Mario Tabraue of Miami, Florida, acquired a two-headed ball python (*Python regius*) named "Medusa" in 1985. He was convicted of smuggling drugs and chopping an informant's body into pieces with a machete, and was sentenced to 100 years in 1989 but was freed in 2000 after only 12 years by cooperating with police (Anonymous, 1985, 2000); 7) Nicolas Cage donated "Deucey" (later renamed "Harvey"), his 1 m gophersnake (*Pituophis catenifer annectans*) to the Audubon Zoo in New Orleans while shooting a movie there in 2010. The snake resided in the zoo for 14 years until his death on 15 September 2021 (Anonymous, 2021).

One of the more unusual payments for a two-headed snake was made by Harry Travers [or Charles Hoyt; Anonymous, 1914] for a pygmy rattlesnake (*Sistrurus catenatus*) collected by George Brewer near Gull Lake, Michigan, in the fall of 1914. Travers traded a horse for the snake with expectations of keeping it alive until spring to put on exhibition for an added income. Sadly, in February 1915 the snake died after several months in captivity, as did Travers's dream of wealth (Anonymous, 1915).

A few individuals have had the distinction of having collected numerous dicephalic serpents. Zachary "Old Zach" Archer reportedly caught three two-headed or two-tailed snakes every year (Anonymous, 1889). Mike Stockton reports observing five dicephalic rattlesnakes (*Crotalus atrox*) in Carlsbad, New Mexico, as a youngster in the early 1990s (pers. comm.,

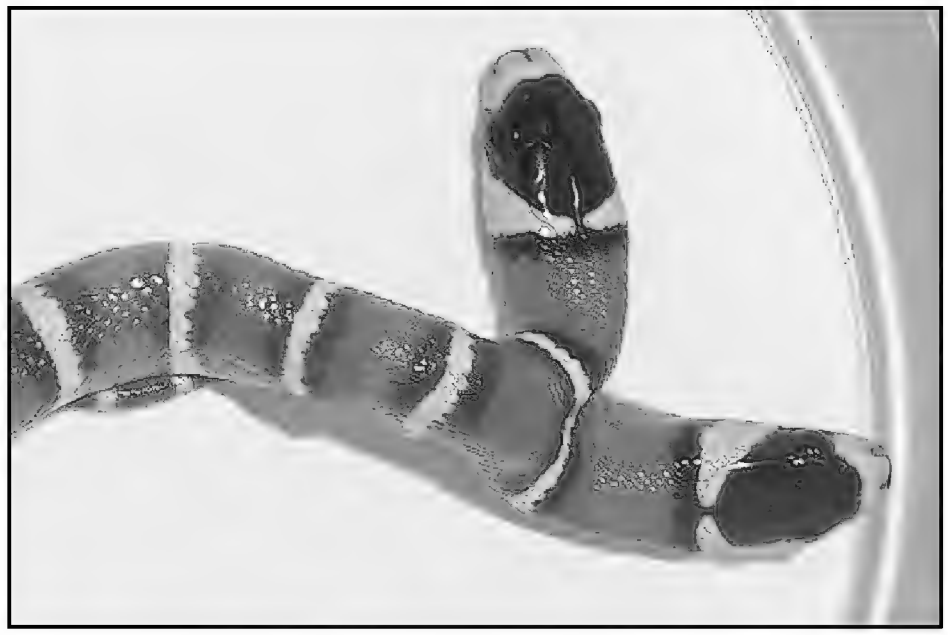

**Figure 3**. Mountain kingsnake named Bingo-Bongo.

Mike Stockton, 2006). While the author has the largest collec tion of preserved examples of axial bifurcation ($n = 21$), at the top of the list for living specimens are two herpers, Todd Ray and Brian Barczyk, each having had six dicephalics.

Todd Ray is the proprietor of the Venice Beach Freak Show. He is credited with the Guinness World Record for largest collection of living two-headed animals in 2010, comprising 22 animals of which two were snakes [*Heterodon* and *Lampropeltis*] (Guinness World Record Book, 2010). Among his six dicephalics are number one, a prodichotomous tricolor kingsnake (*Lampropeltis pyromelana*) named "Bingo-Bongo" (Figure 3) that was born 8 August 2007 in Germany and purchased for $5,000 from Christian Pixner and which Todd renamed "Laverne & Shirley." Number two was a craniodichotomous *Boa constrictor* that was born in a Hayward Pet Store in California on 18 May 2009 owned by Aaron Dickey, and sold for $7,500. Number three was a prodichotomous, amelanistic hog-nosed snake (*Heterodon platirhinos*) born in October 2009 in Elgin, Texas, and purchased for $20,000 (Figure 4). It survived only 9 months. Number four was a captive-bred prodichotomous black pinesnake (*Pituophis melanoleucus*) with a parasitic right head that Todd purchased for $5,000. Number five was a beautiful prodichotomous, albino Honduran milksnake (*Lampropeltis triangulum hondurensis*) that was captive bred by Daniel Parker of Sunshine Reptiles on 27 October 2011 and named "Cleo & Patra" (Figure 5). It was purchased for $50,000 by Todd and renamed "Medusa." Number six was a captive-bred, craniodichotomous, amelanistic cornsnake (*Lampropeltis guttatus*) born on 26 July 2016 named "Hiss & Hers."

Brian Barczyk of the Reptile Zoo (Reptarium) in Utica, Michigan, has also owned six dicephalics. Number one was a captive bred craniodichotomous, albino black ratsnake (*Pantherophis obsoletus*) purchased for $15,000 and sold to Todd Ray for $50,000. Number two was a craniodichotomous Mexican black kingsnake (*Lampropeltis getula nigrita*). Number three was a prodichotomous, Nelson's milksnake (*Lampropeltis triangulum nelsoni*) from 2011 that died very soon after purchase. Number four was a prodichotomous, striped California kingsnake (*Lampropeltis californiae*) that was captive bred in 2015 by John Mack of Dayton, Ohio, and named "Ben & Jerry." Number five was a prodichotomous, albino cornsnake (*Pantherophis guttatus*) that was captive bred in January 2018 in Texas. Barczyk paid $15,000 for it and named it "Laverne & Shirley." It died in April after only four months (and 10 days with Brian). Number six was a craniodichotomous, high white,

**Figure 4**. Amelanistic eastern hog-nosed snake.

black striped California kingsnake (*Lampropeltis californiae*) named "Cookies & Cream."

Dicephalic snakes have been figured in some legal battles. The first case involved contested ownership of a two-headed snake valued at $800. The snake, a 150 mm "adder," was captured in mid-November 1922 in Sampson County, North Carolina. Willie Northam, represented in the Superior Court of Wayne County, Goldsboro, by his attorney Paul Edmundston, claimed that Carson Loclear, represented by his attorney Roscoe Butler, had possession of Northam's serpent. The court's clerk, John Hooks, executed the papers under pressure as Loclear was ready to make his get-away on the train in just 35 minutes. The case was to be heard on 27 November but its verdict is unknown (Anonymous, 1922a,b). Another interesting court case concerned 15-year-old Frank Hunt of Tarrant, Alabama, who collected a two-headed watersnake (*Nerodia* sp.). His younger brother sold it to a neighbor for $3.00. However, Frank's mother, who imagined that the snake was worth at least $50.00, then sued Mrs. W. M. Hooten on the grounds that Frank was a minor and did not have permission to sell the snake. The case was heard by Judge J. E. Haigler but the verdict is unknown (Anonymous, 1935). A similar situation occurred two years later when Bobby Broderick, 10 years of age, caught a dicephalic gartersnake (*Thamnophis* sp.) near his home in Chehalis, Washington, in December 1937. Thinking he could make some money, he sold it to Gordon Kanouse for $0.25 after his mother left the house. Mrs. Broderick, however, had been offered $5.00 for the snake but discovered it was gone when she returned home, much to the disappointment of both Bobby and his mother (Anonymous, 1937a).

Two-headed snakes have been involved with some awards.

**Figure 5**. Albino Honduran milksnake named "Cleo & Patra."

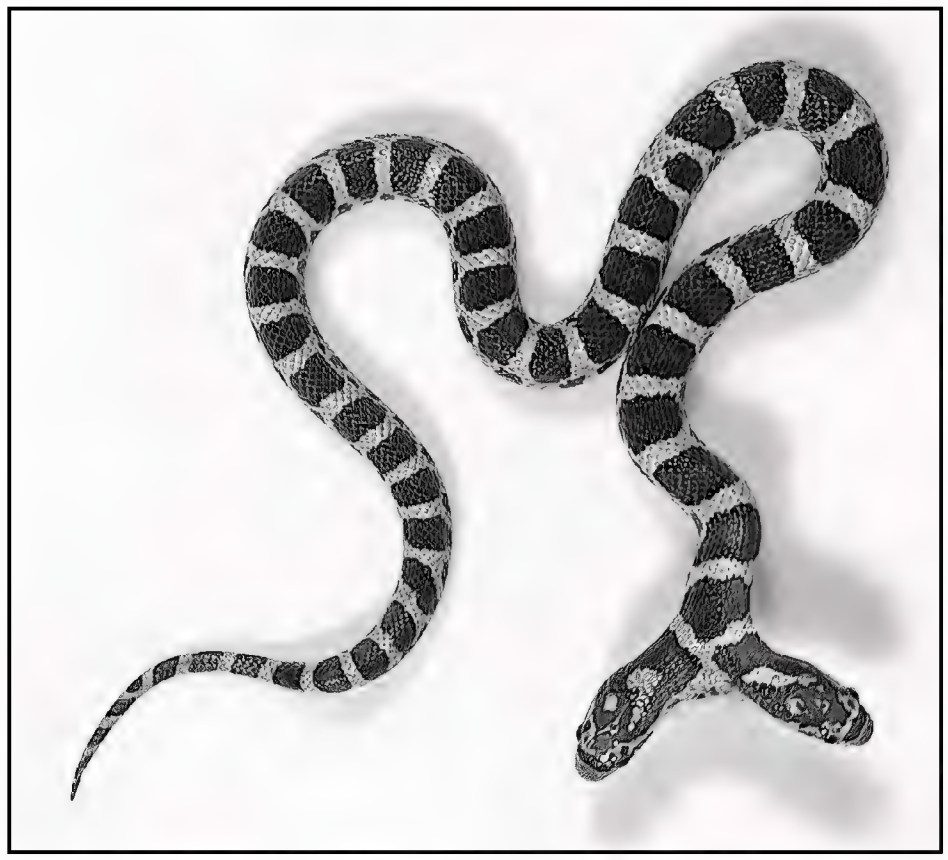

**Figure 6**. Eastern milksnake named "Brady & Belichick."

T. R. Littlefield, a U.S. Forestry Service surveyor for the Ogden, Utah, office, won third place in the American Forestry Association's National Photographer's Contest in 1926 with a photo of a dicephalic tiger rattlesnake (*Crotalus tigris*) observed near Tucson, Arizona (Anonymous, 1926). George G. Gowan, on 6 November 1937, copyrighted a photograph (# J 22431) of an unidentified two-headed snake as the "only live 2-headed snake in the world" (Anonymous, 1937b). A photograph of a dicephalic watersnake (*Nerodia erythrogaster transversa*) by Mrs. Fred Thomas of Woodcrest, Texas, in March 1951 won the "Picture of the Year" award for 1952 from the *Port Neches Chronicle*. The snake did not survive long but it was observed at the Thomas home when it was alive by more than 2,000 people (Anonymous, 1952). A California kingsnake (*Lampropeltis californiae*), owned by the Becky Brewer family, won the grand prize in the "Most Unusual Pet" category at the 2001 Orange County Fairgrounds in Costa Mesa, California (Alderton, 2002). And in 1961 a two-headed ratsnake (*Oocatochus rufodorsatus*) found in a village near Shanghai, China by Zong Yu was more popular and captured more newspaper coverage than Nikita Kruschchev and the Communist Party's 22nd Congress (Anonymous, 1961a).

A 1.5-m dicephalic black ratsnake (*Pantherophis spiloides*), named "Instinct–Mind," who lived for 16 years in captivity, was an experimental subject of numerous behavioral and psychological studies for two decades by Gordon Burghardt and colleagues, University of Tennessee, Knoxville (Klein, 1976; Burghardt, 1991; Andreadis and Burghardt, 1993).

The most unusual advertisement involving a dicephalic snake occurred in 1900. M. L. McKinnon, of Addison, Mississippi, wrote the newspaper office of *The Messenger and Intelligencer* on 22 March 1900 to advertise that he wanted to buy a two-headed snake and was willing to pay $5.00 for one that was no longer than 6 inches, to which the editors replied "We hope if any of the readers of the M. & I. have any two-headed snakes lying around loose they will send them to Mr. McKinnon at once" (Anonymous, 1900).

Wallach (2012) reported that his dicephalic *Lampropeltis triangulum*, "Brady & Belichick" (Figure 6), was able to crawl backwards on the grass equally as well as forwards. Such behavior, not normally attributed to snakes, was the subject of a report from Spokane, Washington, in July 1919 when an unidentified snake was captured and found to crawl backwards or forwards. It was placed on exhibit at the local drug store (Anonymous, 1919). This bizarre ability was also reported by Douglas Wise and Ron Hudson in a neonate gartersnake (*Thamnophis sirtalis*) from New Hope Landing, California (Anonymous, 1957). Wallach (2012) also noted that "Brady & Belichick" was unable to soak or swim in a bowl of water. When placed in water the snake immediately dove to the bottom of the container and nosed around as if trying to find a way out. Something was wrong with the snake's sense of balance while in a container of water. Similarly, perhaps from the same condition that recognizes down as up, a neonate watersnake, *Nerodia rhombifer*, from Oklahoma drowned in August 1973, one day after being found, while being given a bath (Anonymous, 1973). A Canadian gartersnake (*Thamnophis sirtalis pickeringii*) named "Snakey," collected by Carli Goebel and Mat Vearchell in September 2010 on Vancouver Island, British Columbia, drowned while swimming in a water bowl after two weeks of captivity (Goebel, 2010).

The appearance of two-headed snakes is considered by some cultures as an omen of disaster (Anonymous, 2018): 1) In China during the 6th-7th Century B.C., Sunshu Ao, the future prime minister of King Zhuang of the state of Chu, encountered a two-headed snake while walking as a child. This was believed to be a sign of imminent death so Sunshu Ao killed the creature and buried it to save others from that fate. Sunshu Ao did not die but instead enjoyed a powerful political career (Huang, 2005); 2) In the spring of 1895 a two-headed snake was found in Gainesville, Florida, and thought to be an evil omen so it was burned up on a trash pile by an Afro-American woman (Anonymous, 1896a); 3) Running Buck, an Indian of the Muskcogee tribe, found and killed a two-headed rattlesnake (*Crotalus horridus*) along the Snake Creek in the Indian Territory (now Oklahoma) in October 1897. Tradition told of another Muskcogee brave many years earlier that killed a two-headed serpent when his tribe was fighting a losing battle with another tribe. The snake was considered a good omen and gave confidence to the tribe, which eventually was victorious. Therefore, Running Buck was seen as the chosen one of the Great Spirit to lead the tribe to glory and greatness (Anonymous, 1897); 4) The appearance of a dicephalic herald snake (*Crotaphopeltis hotamboeia*) in Umkomass, Natal, South Africa on 6 February 1996 was believed responsible for a recent floods and resurgence of violence in South Africa (Anonymous, 1996); 5) Villagers caught a two-headed ratsnake (*Elaphe dione*), believed it was a bad omen and refused to give it to scientists for study (Anonymous, 2004); 6) A person bitten by a two-headed snake in Brazil is believed to go blind and die (Fita et al., 2010); 7) The capture of a two-headed Merrem's pitviper (*Xenodon merremii*) on 22 March 2020 in Bahia, Brazil, prompted fears of coming disaster in conjunction with Covid-19 and a cumulonimbus cloud (pers. comm., M. Nolasco, 2020); 8) According to dream analysis experts, dreaming of a two-headed snake means that threats and harm may come to you, most likely from two directions (Gonzales-Berrios, 2021); 9) However, fear

**Figure 7**. The Foumban Royal Museum in Cameroon.

of snakes, especially of the two-headed variety, is mainly confined to Western Civilization. Snakes are revered, honored, and worshiped throughout the Third World, particularly in Africa and Asia (Mundkur, 1983). The Bamoun culture of western Cameroon believe that a two-headed snake is a positive omen of dual power of the king. They constructed the Foumban Royal Museum in the form of a two-headed snake (Vinyoh, 2021: see Figure 7).

At least five dicephalic snakes have succumbed to "suicide" by one head attacking the other: 1) The first example comes from Pennsylavnia. H. C. Spencer, who found four dicephalics in Bradford County, Pennsylvania, between 1910 and 1911, collected a gartersnake (*Thamnophis sirtalis*) with a parasitic (i.e., vestigial) head from Mount Lake in August 1910. The larger head attacked the smaller, parasitic head lacking eyes and pulled it out, causing the snake to die during the night (Anonymous, 1910, 1911); 2) The next occurrence was in South Africa where, sometime between 1919 and 1931, a proarchodichotomous rear-fanged Schaapsteker (*Psammophylax rhombeatus*) at the Port Elizabeth Museum and Snake Park bit its companion head with resulting envenomation and death. At one time one head swallowed the other head down to the fork in the neck but the snake survived when the heads were separated. As if in retribution, the head that had previously been swallowed attacked the other several days later with mortal effect, killing them both. An autopsy revealed that the head that was attacked was envenomated by the other head (FitzSimons, 1932); 3) In 1938 an Asian watersnake imported to the London Zoo died in a similar manner with one head envenomating the other (Anonymous, 1938); 4) A similar instance is from July 1971 when the above-mentioned California kingsnake named "Dudley Duplex" II from the San Diego Zoo killed itself by one head swallowing the other. During the first attempt, Duplex tried to swallow Dudley but the zookeepers intervened and separated the heads only to have Dudley swallow Duplex a few days later, ending in the creature's death (Shuker, 2010); and 5) In 1989 a Neotropical tricolored kingsnake (*Lampropeltis triangulum hondurensis*) at the Santiago Zoo in Chile killed itself by fighting over food (Yeomans, 1990).

The organs of the internal anatomy are often duplicated, or partially duplicated, in dicephalic snakes. Complete or partial visceral data for 54 specimens of 32 species from 10 families (Boidae, Colubridae, Elapidae, Homalopsidae, Hydrophiidae, Lamprophiidae, Natricidae, Sibynophiidae, Viperidae and Xenodontidae) are available based upon the literature and my dissections. The first examination of the viscera in a two-headed snake was published by Redi (1684). Generalized patterns are not discernible and there appears to be no correlation between length of bifurcation of neck and body and duplication of internal organs. The trachea and esophagus are paired in 50 of the 54 individuals (with only *Sibynomorphus mikanii* having single organs of each). Double hearts are found in 21 cases, single hearts in 19 specimens, and partially duplicated hearts in four individuals. The stomach is variable with 28 specimens exhibiting a pair of stomachs, 16 snakes having a single organ, and four individuals with stomachs that are duplicated anteriorly but fuse into a single organ posteriorly. The liver is normally single (23 specimens) but eight snakes have paired livers. Likewise, the gall bladder, spleen and pancreas are typically single (16, 12 and nine, respectively) but duplicated in five, four, and three specimens (with one specimen having a triple pancreas). The small intestine is undivided in most snakes (27 cases) but nine individuals have a duplicated intestine cranially that fuses into a single organ caudally, two specimens have the opposite condition (single anteriorly but divided posteriorly), and one snake has completely duplicated small intestines. Only a single specimen has both kidneys duplicated while the other 39 snakes have single kidneys.

Snake lungs, which are quite variable in normal snakes, present the most variable organs with respect to duplication. Among species that typically have a left and right lung, the left lung is absent and the right lung duplicated in nine specimens, the left lung is absent and the right lung single in two individuals, the left lung is single and right lung duplicated in one snake, the left and right lung are single in one specimen, the left lung is duplicated and the right lung single in four specimens, the left and right lung are both duplicated in one snake, one specimen has a left blind sac and a duplicate right lung, and one snake has a left blind sac and a single right lung. Among snakes that normally have only a single right lung, 19 specimens exhibit a duplicated lung whereas five snakes have a single lung.

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# Herpetology 2022

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

## CHASING CANE TOADS

S. T. Gardner et al. [2022, Herpetologica 78(1):1-8] note that cane toads (*Rhinella marina*) are an invasive species introduced to southern Florida, and populations have spread northward through the state. Populations established near expanding edges of their distributions are predicted to have greater endurance, an indicator of dispersal capability, than longer established populations. To assess endurance, the authors collected cane toads from northern and southern populations in Florida, placed them into a track, and prodded them to hop. The number of prods (taps), hops, and time spent hopping were recorded, along with the total distance each toad moved on the track. To further evaluate endurance, an additional set of toads were placed inside a treadmill, where movement was required to maintain equilibrium. Toads moved on the treadmill until reaching exhaustion. Blood lactate levels were measured from each toad upon exhaustion and during a 3-h recovery period. After the treadmill trials, there was no population effect on the distances traveled by toads. There was also no population effect on lactate levels of toads when reaching exhaustion or during recovery. Overall, cane toads from the sampled northern edge population showed no differences in endurance compared to those sampled from the southern population in this study. This finding may indicate that further dispersal is limited in the northernmost populations of the cane toad range in Florida.

## FIRE ANTS ALTER AMPHIBIAN POPULATIONS

A. K. Darracq et al. [2022, Journal of Herpetology 56(1):84:91] note that invasive species in the southeastern United States, such as the red imported fire ant (*Solenopsis invicta*; hereafter RIFA), may be a factor in amphibian declines via depredation, injury of, and/or competition with native amphibians for arthropod prey. The authors' objective was to assess the influence of RIFAs and RIFA reductions on the diet, growth, and survival of southern toads (*Anaxyrus terrestris*). In 2013 and 2014 they randomly assigned juvenile toads into enclosures either treated with an insecticide, hydramethylnon, to reduce RIFAs (hereafter RIFA treatment) or maintained with ambient levels of RIFAs (hereafter control; n = 4 enclosures per treatment). The mean proportion of recaptured toads was 9.5 and 21 times greater in the RIFA treatment compared to the control in 2013 and 2014, respectively. Toads in the control enclosures were 23% larger at the end of the study than toads recaptured in the RIFA treatment enclosures, though this was driven largely by differences in toad densities. Toad diets in the control and RIFA treatment enclosures overlapped 94%. When considering the dietary overlap of different ant genera only, the dietary overlap was 44%. This study provides evidence RIFAs alter amphibian populations and may be contributing to amphibian declines in the southeastern United States. Given the high mortality rates observed, RIFAs should be considered when developing conservation plans for any amphibian species found in areas where RIFAs are present.

## THE WORLD'S HIGHEST-ALTITUDE REPTILE

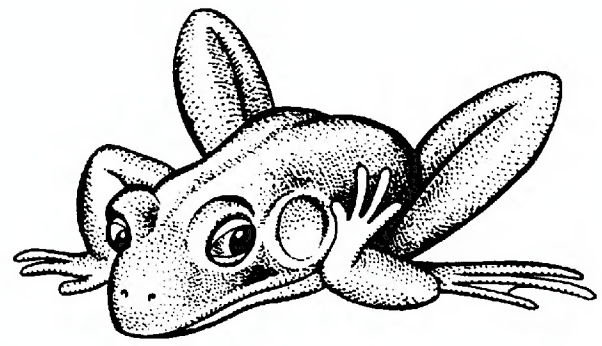
J. Cerdeña et al. [2021, Herpetozoa 34:61-65] note that life at high altitudes is particularly challenging for reptiles, and involves the evolution of specialized adaptations to deal with low temperatures, hypoxia and intense UV radiation. As a result, only very few reptile taxa are able to survive above 5000 m elevation and herpetological observations from these altitudes are exceedingly rare. The authors report on an exceptional observation of a lizard population (*Liolaemus* aff. *tacnae*) from the high Andes. During an ascent of Chachani mountain (6054 m, 16°11'S, 71°32'W), they observed and documented photographically this species living between 5000 and 5400 m above sea level. After a review of the literature, the authors have concluded that this is the highest known record of a reptile species.

## FROTH NESTING BENEFITS

J. Gould et al. [2021, Ichthyology and Herpetology 109(2): 537-544] note that for amphibians that oviposit in temporary aquatic systems, there is a high risk of desiccation-induced offspring mortality when water evaporates prior to the completion of embryo or tadpole development. Such a strong selective pressure has led to the evolution of a variety of traits in reproducing females and their offspring to improve the odds of reproductive success when free-standing water is temporarily available. The authors describe an adaptive function of froth nesting in the sandpaper frog, *Lechriodus fletcheri*, as a possible maternal strategy for protecting embryos from the immediate risk of desiccating in highly ephemeral pools that frequently dry prior to hatching. Field observations revealed that embryos located near the core of nests remained alive and continued to develop for several days after becoming stranded out of water due to declining water levels, with embryo viability maintained long enough for additional rainfall to recharge pools and support hatching of tadpoles into water in some cases. In laboratory trials, the proportion of embryos surviving in nests exposed to desiccating conditions was positively correlated with nest volume, while the rate of water loss relative to nest mass declined, both of which are likely a function of reduced surface area relative to volume in larger nests. The authors suggest that the encapsulation of embryos within an aerated mucus shields them from desiccation by trapping moisture around their external surfaces. As embryos of *L. fletcheri* complete development rapidly, the ability for the froth nest to protect against desiccation for several days may allow embryogenesis to be completed largely out of water despite the larval phase not being terrestrial. These results suggest froth nesting has played an important role in facilitating this species' use of ephemeral habitats that most other amphibians with aquatic reproductive modes are incapable of exploiting.

# The Tympanum

**Refueling the Tank**



Dear CHS Members,

After six years, 11 months, and 83 consecutive monthly columns in a row, the time has come for me to give *everybody* a well-deserved break. When I first began writing these columns for the June 2015 issue of the *Bulletin*, I had no idea how long they would last. There is a lot more to publishing a monthly column than merely writing one and submitting it. Mike Dloogatch and Joan Moore slugged their way through every single one of them, often times saving the day with their patient suggestions and valuable input. And over the course of the past several years, Steve Barten was able to enhance the effort by editing some pretty lousy photography. While the streak has now been broken, by no means is this the last you that will hear from me. I am always proud to be part of the *Bulletin*, and look forward to writing many more articles for it in the years ahead. We can *all* be grateful for belonging to a group that, without fail, knocks out such an attractive and professional publication on a monthly basis. It has been a pleasure, a privilege, and a downright hoot to be able to write for you all. Sincerely,

**Roger A. Repp, 9044 N Valgrind Ln, Tucson, AZ 85743**
**repproger22@gmail.com**

## Minutes of the CHS Board Meeting, April 15, 2022

A virtual meeting of the CHS board of directors via Zoom conference video/call was called to order at 7:36 P.M. Board members Rachel Bladow and Stephanie Dochterman were absent. Others in attendance were Zorina Banas and Karen Furnweger. Minutes of the March 18 board meeting were read and accepted with changes.

**Officers' reports**

Treasurer: Rich Crowley went over the March financial report.

Membership secretary: Mike Dloogatch read through the list of those whose memberships have expired. It has been suggested that the different levels of CHS membership should be explained on the application forms.

Media secretary: The CHS Instagram account is down. Rules for the CHS Facebook page were discussed.

Sergeant-at-arms: Tom Mikosz reported that 45 people attended the March 30 meeting across all media.

**New business**

John Archer will survey board members as to the best day to hold board meetings.

The meeting adjourned at 9:00 P.M.

*Respectfully submitted by recording secretary Gail Oomens*

## NEW CHS MEMBERS THIS MONTH

Jessica Seiders

## Advertisements

For sale: **highest quality frozen rodents**. I have been raising rodents for over 30 years and can supply you with the highest quality mice available in the U.S. These are always exceptionally clean and healthy with no urine odor or mixed in bedding. I feed these to my own reptile collection exclusively and so make sure they are the best available. All rodents are produced from my personal breeding colony and are fed exceptional high protein, low fat rodent diets; no dog food is ever used. Additionally, all mice are flash frozen and are separate in the bag, not frozen together. I also have ultra low shipping prices to most areas of the U.S. and can beat others shipping prices considerably. I specialize in the smaller mice sizes and currently have the following four sizes available: Small pink mice (1 day old—1 gm) , $25 /100; Large pink mice (4 to 5 days old—2 to 3 gm), $27.50 /100; Small fuzzy mice (7 to 8 days old—5 to 6 gm), $30/100; Large fuzzy mice / hoppers (10 to 12 days old—8 to 10 gm), $35/100 Contact Kelly Haller at 785-224-7291 or by e-mail at kelhal56@hotmail.com

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to mdloogatch@chicagoherp.org.

## UPCOMING MEETINGS

Please try to join us *in person* or online for the next meeting of the Chicago Herpetological Society, to be held at 7:30 P.M., Wednesday, May 25, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. The speaker will be **David Lazcano**, who recently retired from his position as professor of biology at the Autonomous University of Nuevo León in San Nicolás de los Garza, Mexico. David and his students and colleagues have contributed many articles to the CHS *Bulletin* over the past 30 years. David will speak about ongoing projects and activities in the herpetology lab at the university.

The June 29 meeting will combine a members' **show & tell** with a **photo and art contest**. All CHS members are encouraged to display one of their favorite animals either at the in-person meeting or via Zoom. Be prepared to give a short (under five minutes) presentation to the group. Don't be shy. Neither age (yours) nor commonness (the animal's) should be a limitation. If you wish to present via Zoom, you must notify Rachel Bladow (rbladow@chicagoherp.org) beforehand. Photographs and artwork for the contest must be submitted online. Send your entries to Rachel Bladow (rbladow@chicagoherp.org). Winners in each category will be chosen by a vote of the members in attendance (both in person and online). The winners will appear on the cover of a *Bulletin*.

Please check the CHS website or Facebook page each month for information on the program. Information about attending a Zoom webinar can be found here:
<https://support.zoom.us/hc/en-us/articles/115004954946-Joining-and-participating-in-a-webinar-attendee->

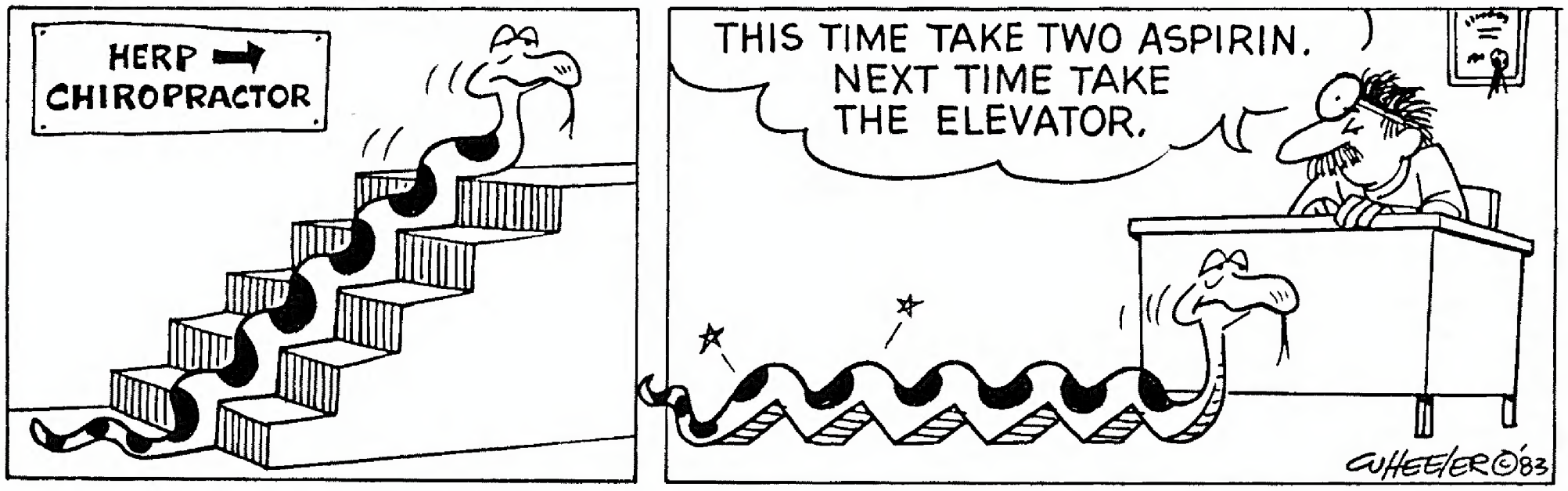
### Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? The next board meeting will be held online. If you wish to take part, please email: mdloogatch@chicagoherp.org.

## REMINDER

When you shop AmazonSmile and select the Chicago Herpetological Society as your charity, Amazon will make a donation to the CHS. <https://smile.amazon.com/>

## THE ADVENTURES OF SPOT



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